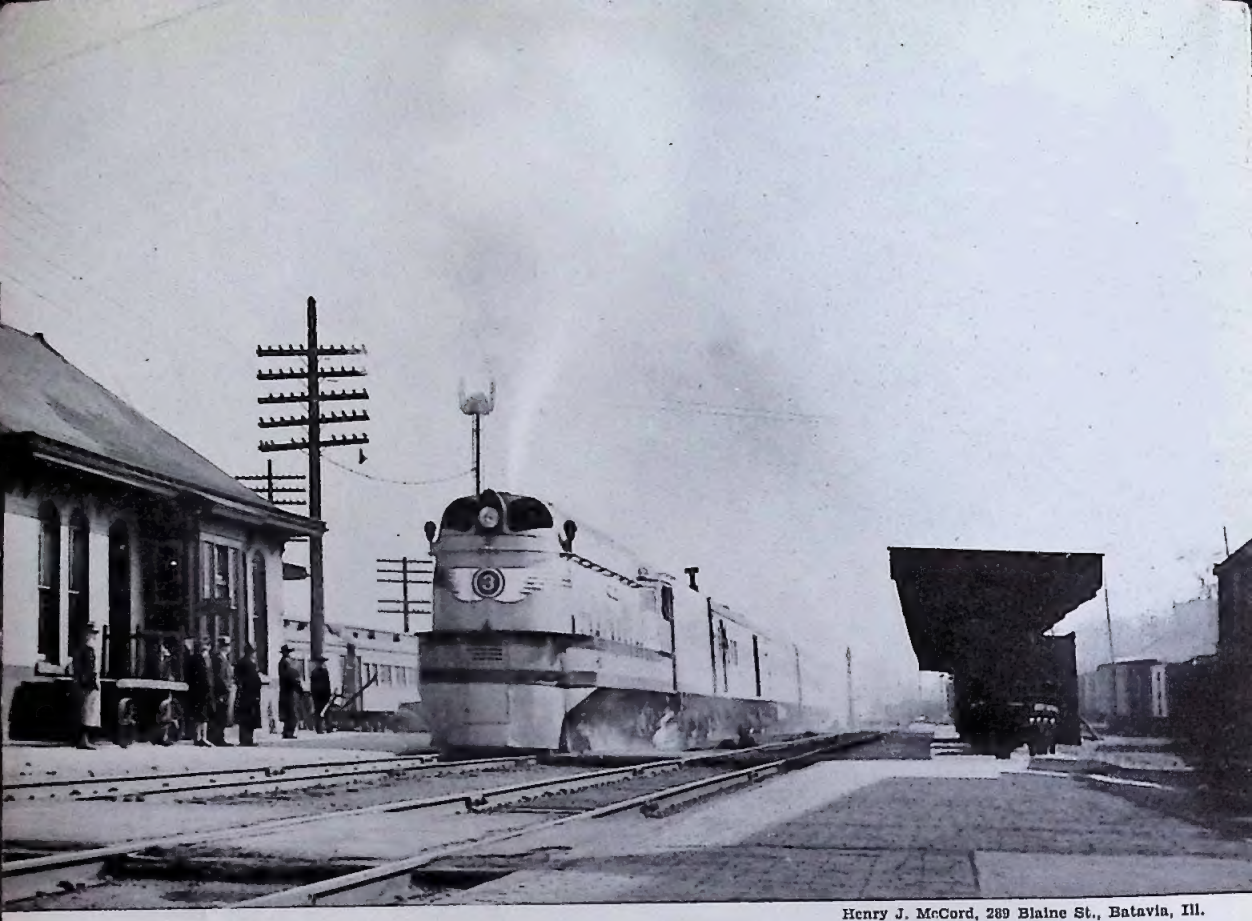
Trains

25¢

for SEPTEMBER 1942



Henry J. McCord, 289 Blaine St., Batavia, Ill.

Midwest Hiawatha arriving at Elgin, Ill.

From Elgin to Davis Junction, Ill., is 43.4 miles, which the *Midwest Hiawatha* of the Milwaukee Road makes in 34 minutes start to stop for an average of 76.6 miles per hour, one of the fastest steam runs in the country. The only faster steam-operated runs are those of the *Detroit Arrow* of the Pennsylvania and the *Twin Cities Hiawathas*, according to the *Railroad Magazine* speed tabulations. The *Midwest Hiawatha* was put on about a year ago as a fast afternoon train (eight hours) for the 488 miles between Chicago and Omaha. Competitive train is the Burlington's Diesel-powered *Exposition Flyer*, which was speeded up to meet the eight-hour schedule. Burlington mileage is 496. The Milwaukee train uses the older series of *Hiawatha* cars, refurbished, and the original Atlantic-type *Hiawatha* locomotives, which were originally designed to pull six-car lightweight trains at cruising speeds of 100 miles per hour, but have been known to take trains of 14 cars and make schedule time. Henry J. McCord gets unusual photos like this and the one on the cover by sticking close to stations and yards. (Don't try this during war time.)

Waybills

Lest we forget: The railroads are doing their fine job smoothly and effectively with equipment and other facilities that they have provided themselves entirely out of their own funds, while their government-subsidized competitors find it difficult to meet war conditions. Such is the inherent efficiency of railroad transportation that in spite of every possible obstacle the railroads are able to do the biggest transportation job in the history of the world, without a hitch.

Memories:

Suisan Bay glimmering in the moonlight, seen from the observation platform of a Southern Pacific train crossing the huge bridge near Benicia.

The *Twentieth Century,* ahead of time, waiting five or six minutes at Spuyten Duyvil to fit in its place in the morning parade to Grand Central.

Shivering on the Gallup (N. Mex.) station platform at 4:45 in the morning while watching the Santa Fe *Fast Mail* do its station work.

The lineup of trains waiting for the ferry on the Key System mole in Oakland, before the days of the Bay Bridge.

I have finally met a statistic face-to-face. A friend of mine visited the Smoky Mountain Railroad on his vacation and tells me he was the first revenue passenger this year. So when the 1942 annual reports show 1 revenue passenger for the SM I will have the satisfaction of knowing a statistic, not just part of one.

A. C. K.

Trains

Editors: A. C. Kalmbach, Linn H. Westcott, Willard V. Anderson

Vol. 2 September, 1942 No. 11

Features

SAGA OF THE UP STREAMLINERS ---------- 4
By A. C. Kalmbach.

UTAH INTERURBANS ---------- 10
Western electric lines still going strong.

THE LADY SAID NO ---------- 12
What has happened to Lord and Lady Baltimore.

BY RAIL ACROSS LAKE MICHIGAN ---------- 14
By Harold M. Mayer.

RAILFANS ON PARADE ---------- 21
By E. F. Kinkead.

DIESEL IN THE ROCKIES ---------- 26
A Maxwell scenic.

YOUR GUESS IS GOOD ---------- 28
A railroad quiz.

WHITE PASS & YUKON ---------- 35
By William C. Moore. Part II of his trip.

NEW TUNNEL ---------- 42
C&O replaces old bore.

also Letters, News, and Miscellany.

Masthead photo, by Granville Thomas, Millville, N. J., is of Union Transportation Company engine, New Egypt, N. J.

Published monthly by Kalmbach Publishing Co., 1568 W. Pierce St., Milwaukee, Wis., U. S. A. The title TRAINS is registered as a trademark in the United States Patent Office.

Entered as second-class matter Oct. 11, 1940, at the post office at Milwaukee, Wis., under the Act of March 3, 1879.

Subscription Rates: Per year in U. S., Central and South America, $2.50 Single copies 25 cents. In other countries, $3.00 per year; single copies 30 cents.

The first issue of TRAINS was for November, 1940. Most back copies available at 25 cents each. Vol. 1, bound in cloth, $4.00.

Saga of the UP Streamliners

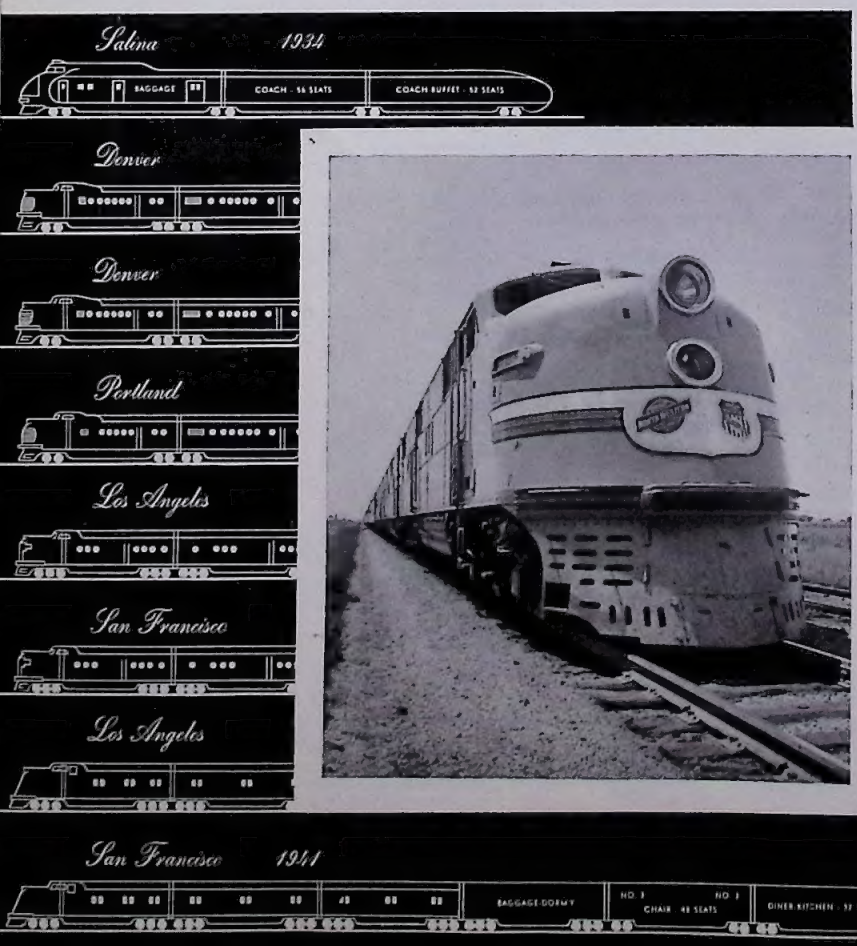
Many years of experiment led to 17-car coast steamliners of today.

★ *By A. C. Kalmbach.*

THE Union Pacific, with its endless long miles of open-country running, was a logical birthplace for the streamliner. On May 23, 1933, W. A. Harriman, chairman of the Union Pacific board, said, "The executive officers of the Union Pacific several months ago reached the conclusion that to save and restore passenger business to the rails would necessitate the development of a radically different type of passenger equipment."

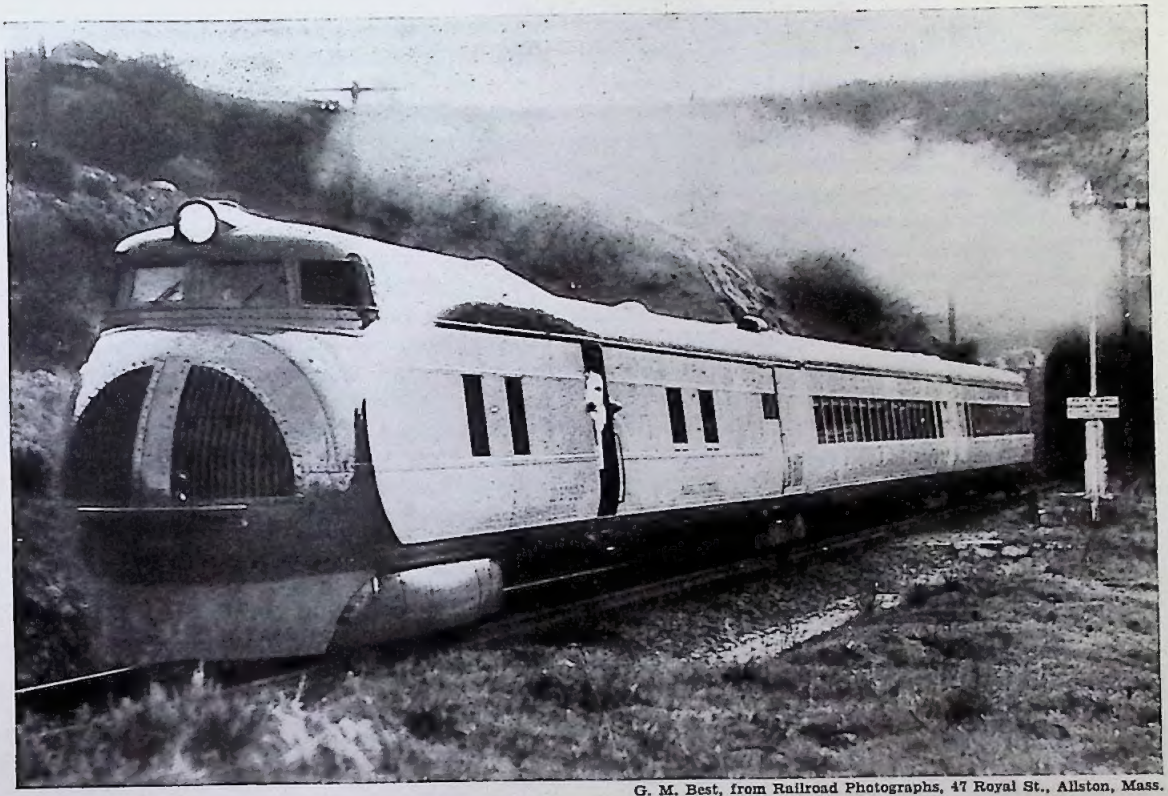
It seems strange today, when railroads are carrying the largest passenger business in their history, that less than 10 years ago a conclusion was reached to "save and restore passenger business to the rails." The train rider of 1942 has all but forgotten the slow, non-air-conditioned, and relatively uncomfortable trains of 10 years ago, so great has been the railroad progress in the decade. Looking back at that time, however, we find the best minds of the railroad business discussing whether fares should be reduced from 3.6 cents a mile, whether greater speed would regain passengers, and in some cases whether the railroad passenger business was worth saving after all.

The Union Pacific was in the foreground of thought on the subject. Its problem was not just to provide more comfortable and somewhat faster equipment. It was to radically change the service to meet new competitive conditions. The UP had mostly long-distance travel and a relatively great percentage of



From 3-car experiment to a 17-car limited in 7 years.

Latest of the streamliners is the newer *City of Los Angeles* (left) which went into service a year ago just a few days after its twin, the 17-car, 6000-horsepower *City of San Francisco*. These two trains have the now-standard Electro-Motive front ends, as contrasted with the typically UP front ends of the earlier 17-car, 5400-horsepower *City of Los Angeles* and *City of San Francisco*. Trains for the two cities can be distinguished by the railroad heralds on the locomotive front ends. The Los Angeles route is over UP and C&NW, and the trains are labeled and owned accordingly. The San Francisco route is over three roads—UP, Southern Pacific, and C&NW—and so the *City of San Francisco* front ends have one extra herald.



G. M. Best, from Railroad Photographs, 47 Royal St., Allston, Mass.

Embryo of that luxurious hotel on wheels, the long-distance streamliner of today, was the three-car *M-10000*, built in 1934 for experimental purposes. This train later became the *City of Salina* and worked in revenue service until early this year, when it was withdrawn and scrapped. It toured the country in 1934, testing performance under various conditions and schedules and at the same time exciting the popular imagination. Above, it is emerging into the early dawn from Tunnel No. 1 on the Southern Pacific north of Los Angeles.

pleasure and vacation business which had all too easily shifted to private automobiles. Thus it had to do something far different to save its passenger business than could be done, for instance, by a typical Eastern road with much short-distance businessman patronage.

The standard passenger train of 1933 required two days and three nights between Chicago and the Pacific Coast. To be practical, any reduction in running time had to be one entire day in order to maintain convenient departure and arrival times. This meant a schedule between Chicago and the coast of two nights and one day, or some 40 hours, quite a change from the approximately-60-hour schedules in effect at the time.

Research and development work for an entirely new type of train was placed in charge of E. E. Adams, then vice-president in charge of engineering for the Union Pacific, now an officer of the Pullman Company. First requisite dictated by the great distances and the lack of local business in the West was that one locomotive be used all the way from Chicago to the coast to save the time of four or five engine changes, as was the previous practice. Further, if the fueling and watering distances of the locomotives could be increased to 500 miles, much time could be saved. This would cut down fuel and water stops from some 20 points to about five. Another objective in the new design was exceptionally light weight without sacrifice of strength, thus reducing locomotive power requirements. Aluminum alloy was chosen as basic material.

Plans emerged from the conferences, plans for a three-car train weighing less than 80 tons, or approximately the same as a conventional Pullman car, and mounted on only four trucks. The train was to have a com-

bination power, baggage, and R. P. O. car, a coach, and a buffet-coach—hardly the train for transcontinental work, but instead purely an experimental unit which would, by its operating results, show whether a larger unit of the same type could be built with sleeping cars for actual Chicago-to-the-coast use.

Power was furnished by a 600-horsepower Winton distillate-burning, spark-ignition engine, direct-connected to a generator driving motors on the front truck. The body design was narrower, lower, and more tubular than any used before. With a train of such light weight, engineers estimated that full streamlining would save 50 per cent of power at 100 miles an hour, so a streamlined front and rear end were very carefully chosen after exhaustive wind tunnel tests with a ⅜″ scale model, using removable end pieces.

Perhaps the most radical innovation was not visible, however. Structurally, the railroad car had always been an underframe, taking all the buffing, pulling and supporting strain, and a car body just simply sitting on the underframe and adding nothing to the strength of the assembly. The first UP streamliner changed this basic concept of car design. The car body was a tubular structure, with no underframe and with floor, walls, and roof all contributing to the structural strength. The result was much less wasted weight, and this idea has been carried out in most lightweight cars built since. This first three-car experimental streamliner was built for the railroad at its own specifications by the Pullman Car & Manufacturing Company in Chicago, where it was first shown to the public on February 14, 1934.

Even before the first public display of the three-car train, a six-car job was started, a train definitely designed for the coast service and including three Pullman sleepers. Meanwhile the three-car *M-10000* traveled from one end of the country to the other, ostensibly showing off to the public but at the same time accumulating valuable test data covering performance under various conditions of grade and curvature. The train was not tested out-and-out for speed, but did maintain the fastest schedules on each road over which it ran. It was also given a series of high-speed braking and acceleration tests between Grand Island and Columbus, Neb., and further tests in regard to the various minor adjustments which resulted from performance. Thus the first train was used as a laboratory in order to work out and apply to the following high-speed trains certain details which could only be settled by actual experience, much the same as automotive designs are often worked out with the assistance of the proving grounds.

Finally, on January 31, 1935, it went into regular service on the short (187-mile) run between Salina and Kansas City. The incubator stage of the streamliner was over and the experimental equipment was put to work earning back at least part of its cost.

But even with the delivery of the second train, the six-car *M-10001*, in October, 1934, the development was only begun. At first this train was powered with a 900-horsepower Winton Diesel engine. The entire first car was used for power purposes, including a 120-horsepower Diesel for lighting, air-conditioning, blower fans, battery charging, and other auxiliaries. The second car was for mail and baggage, the next three were Pullman sleepers, and the sixth was a coach-buffet car.

After several tuning-up runs, this train was taken to Los Angeles and on October 22, 1934, started its record-breaking coast-to-coast run of 56 hours 55 minutes. This run was not made for the purpose of breaking speed records, especially as the portion east of Chicago was run on the New York Central, using the regular *Twentieth Century Limited* schedule, then 18 hours. Had maximum speed been the object, 50 hours would have been feasible. The Los Angeles-Chicago portion of the run was for the purpose of checking the practicability of a proposed 39-hour schedule between the two cities. Nevertheless, the best previous coast-to-coast time had been 71 hours from San Francisco to New York by the E. H. Harriman Special in 1906.

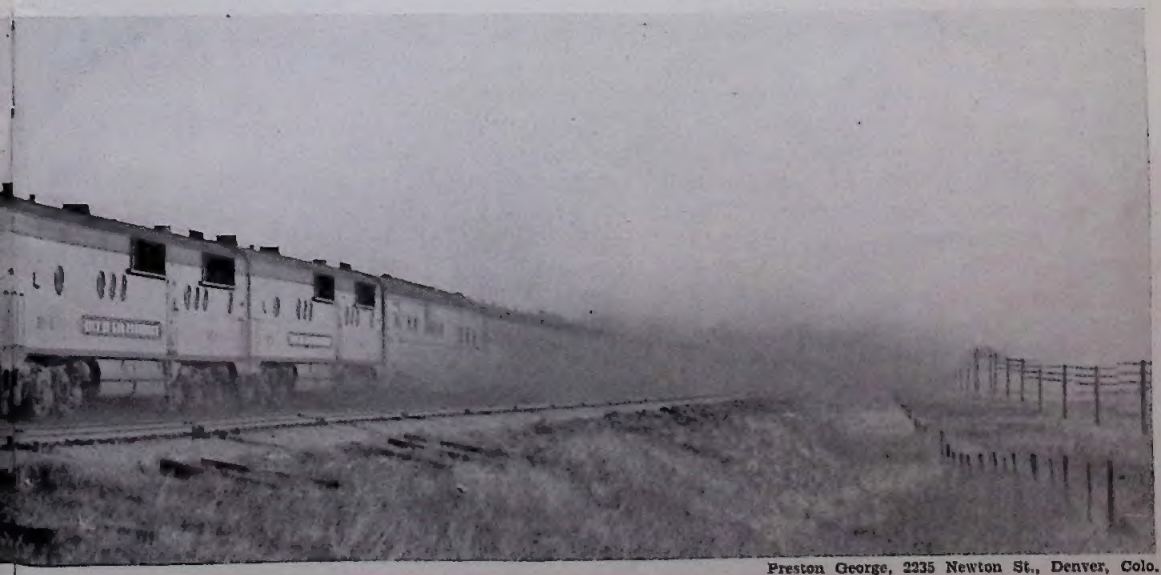
Braking was one of the greatest problems in the technical development of these high-speed trains. Friction between brake shoe and wheel decreases rapidly at high speeds, where it is most needed. Thus, if a high-speed train is to be stopped quickly, the brakes must be applied with great pressure and gradually released as the train slows down. If the pressure is not released a point will be reached where the wheels will lock and slide. It was considered inadvisable to rely on the engineer to accurately graduate the pressure as the train slowed down, and so a new device was developed which controlled the brake-cylinder pressure, applying a very high initial pressure and then automatically graduating it according to the speed until the train was finally brought to a smooth stop.

Satisfaction with the initial experiments was indicated when the Union Pacific, late in 1934, ordered two more trains, each of nine cars. It was announced that the *M-10001* would run between Chicago and Portland, and that the two nine-car trains would run to San Francisco and Los Angeles, all on schedules of under 40 hours.

Meanwhile the *M-10001* went into the shops for a major surgical operation, the addition of another car. This was a diner-

Raising the dust of Wyoming.

The earlier of the present *City of San Francisco* trains (notice shape of front end) raises a real dust cloud as it sings over the UP main line at 100 m. p. h. a few miles east of Cheyenne, Wyo., on its flight westward. Average speed, start to stop, over this section is now about 58 m. p. h., was 45 for fastest trains before streamliners.



Preston George, 2235 Newton St., Denver, Colo.

lounge, spliced in ahead of the Pullmans. The Diesel engine was exchanged for one of 1200 horsepower. New trucks were installed, better adapted to the operating conditions and especially designed to control sway and vibration at high speeds. Plenty of minor adjustments and changes were inevitable. The train emerged to be rechristened the *City of Portland,* and on June 6, 1935, it started the every-fifth-day coast service which has since become such an important part of the Union Pacific passenger facilities.

To maintain the 39¾-hour schedule for the 2272 miles, speeds of 83 miles per hour and better were required, although the average was 57.1. The Chicago & North Western line between Omaha and Chicago was covered in eight hours at 61 miles per hour, while the UP portion, including the mountains, was taken at 56.5 miles per hour.

The *City of Portland* at once demonstrated its ability to attract business. Travelers were even willing to use upper berths when they wanted lowers, with the result that space was consistently sold out and no business to intermediate points was taken until the last day before departure. Then, if some space were left, tickets would be sold to stops short of the terminal. The *M-10000,* rechristened *City of Salina,* wasn't doing badly either. In 1935 W. S. Basinger, passenger traffic manager of the Union Pacific, reported that the train had several times carried 250 passengers into Kansas City, in spite of the fact that it only provided 112 seats. "People seem so anxious to ride the streamliner that they will even stand in the aisles or sit in each other's laps if need be," he commented.

Small wonder that the Los Angeles and San Francisco trains were increased before completion to 11 cars each, the Los Angeles train with 2100 horsepower and the San Francisco train with 2400 horsepower. These were the largest Diesel installations used for passenger service up to that time, and each was housed in two power cars, which could be uncoupled from the rest of the train. In fact, a spare 2400-horsepower locomotive was built at the same time.

Two more trains were almost immediately ordered for Chicago-Denver service. These were originally 12 cars with 2400-horsepower locomotives, but were later increased to 3600 horsepower and 13, then 14, cars. These two Denver trains, on the fastest schedule of over 1000 miles, have not missed a run since. The *City of Los Angeles* went into service May 15, 1936, followed by the *City of San Francisco* on June 14 and the two *City of Denvers* on June 18. Thus, in not much more than a year the basic route network of UP streamliners was formed.

Things did not stop there, however. The new trains seemed almost unlimited in their traffic-attracting potential. Two 17-car trains, veritable hotels on wheels, were ordered for the Los Angeles and San Francisco runs. These had 5400-horsepower locomotives in three units, and are still in service on these runs. The two original Los Angeles and San Francisco trains were put into the UP shops and one new train of 13 cars with a new 4000-horsepower two-unit locomotive was built from cars of each train. This included the famous *Copper King* observation car with the round polaroid windows. This particular train was at first used as a second train on the Los Angeles run, but after the advent of the latest *City of Los Angeles* was increased to 16 cars and used to replace the original *City of Portland.*

Latest additions to the fleet of streamliners are the 6000-horsepower, 17-car *City of Los Angeles* and a similar *City of San Francisco,* which entered service only a year ago. Now there are two trains each on the Los Angeles and San Francisco runs, all of 17 cars, the older 16-car *City of Los Angeles* rechristened *City of Portland* and serving very capably on that run, the two original *City of Denvers,* still handling the Chicago-Denver run on a schedule only slightly slowed by the war; the old original *City of Portland* has been scrapped and leftover cars from putting together the second *City of Portland* are working as a stub train extending the Portland streamliner service to Seattle.

What of the original, the *M-10000*? It did its stuff and earned its cost just as an experiment, and then went on to serve in revenue traffic until last January 25. It was then withdrawn from service and, as duralumin scrap, is now probably incorporated in American-made fighting planes.

Railroad Photographs, 47 Royal St., Allston, Mass.

Fastest long-distance train.

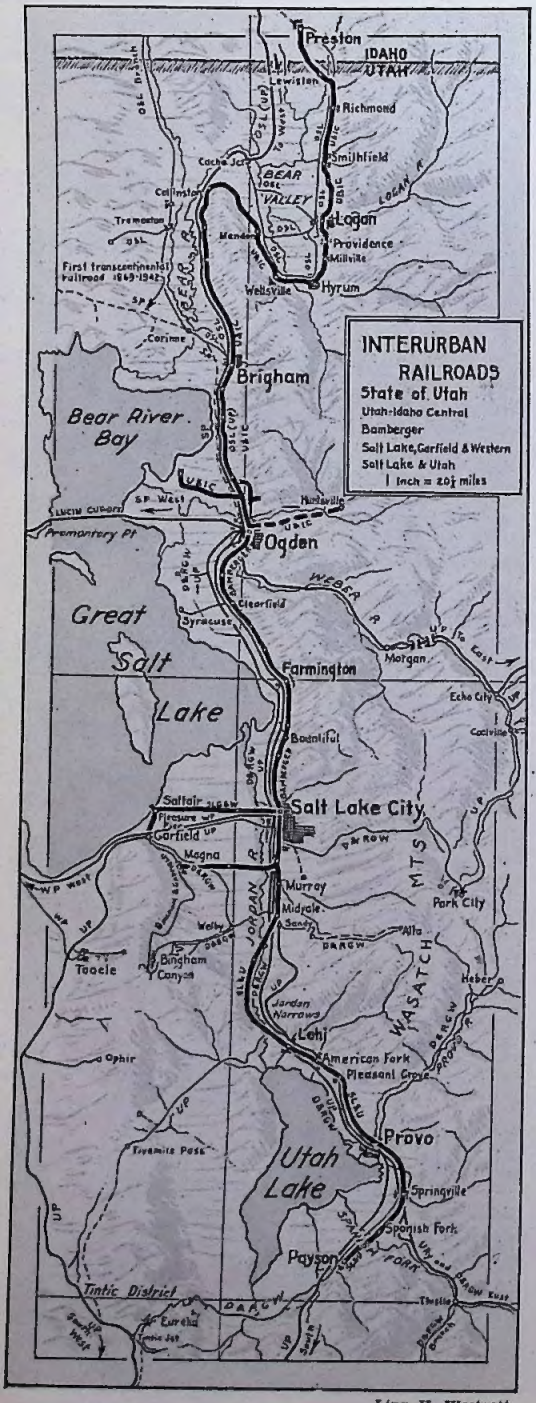
The *City of Denver* shares honors with the *Denver Zephyr* as the fastest train on a run of more than 1000 miles. The two *City of Denver* trains have completed more than 2,300,000 miles each without missing a run.

Second of the streamliners.

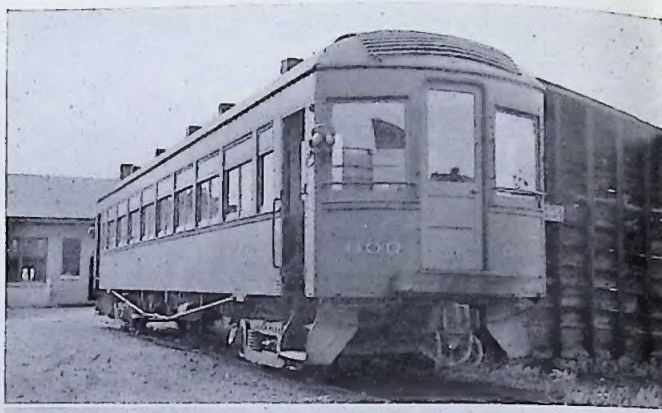
M-10001 runs through Riverside, Calif., on an early test run. This was the first streamliner to carry sleeping cars, and, as the *City of Portland*, was the first to be used in transcontinental service.

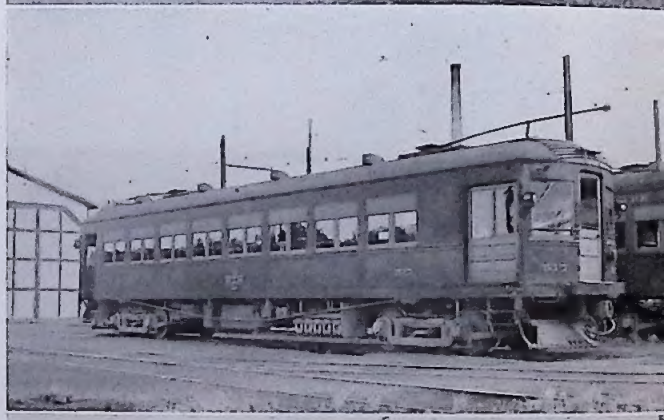
John Maxwell.

Utah Interurbans

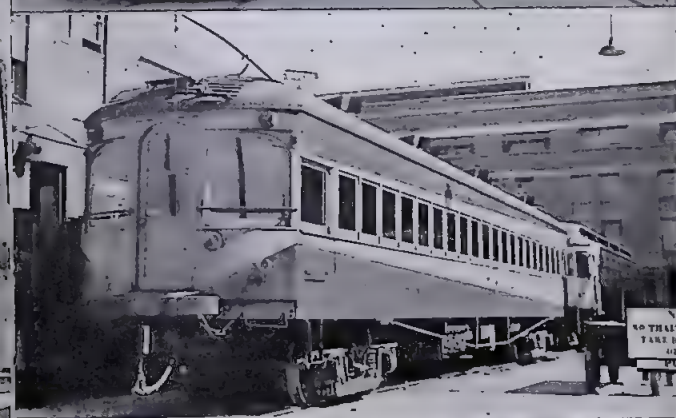


Linn H. Westcott.





R. H. Kindig, 3831 Perry St., Denver, Colo.



Second from top, E. J. Quinby; others, R. H. Kindig.

UTAH is a prosperous state, not so much because of its resources but because its people have always developed their lands to the utmost in efficient, businesslike ways. So it is not too surprising to find Utah, once a land of desert waste, salt flats, parched mountains and deep canyons, now a land of green farmlands, great industries, and tidy cities of homes. Utah today has more miles of interurban railroad for its population than any other state.

There are four principal electric lines, three radiating from Salt Lake City: Salt Lake & Utah to the south, Salt Lake, Garfield & Western west to the shore, and the Bamberger, running north to Ogden. The fourth connects at Ogden and extends 113 miles northward to Preston, Ida. All the companies except the SLG&W serve extensive farmlands and small cities on a narrow belt of land hemmed in between mountains and the Great Salt Lake. The SLG&W is operated for passenger traffic during Summer only, when hourly trains escort tourists and other pleasure-seekers to the amusement pier at Saltair, 16 miles west.

The Bamberger line has the cream of the traffic, however, for it operates in the most densely settled territory, with 17 trains each way daily except Sunday. This railroad was built by the Bamberger family, starting in 1891, and was electrified in 1910. The second car from the bottom right is one of the Bamberger cars standing at the Salt Lake terminus. Officially this station, together with four miles of track, is the Salt Lake Terminal Railroad, owned 50-50 by Bamberger and the Salt Lake & Utah.

The SL&U has a 67-mile main line with six trains daily running to Payson, but Provo is the largest city on the route. There is also an important nine-mile branch to Magna, where ores from the copper mines at Bingham are crushed.

The Utah-Idaho Central has less through traffic, two passenger trains daily, but does a lot of local service between the towns in Bear Valley, particularly for school children. The unusual thing about this line, geographically speaking, is the downward swing between Collinston and the east side of Bear Valley, the only reason being to accommodate the many small communities that hug the foot of the mountains. The company also operates a short branch to the west of Ogden, and once a line to Huntsville, now under dam water.

The combined main lines from Preston to Payson are only five miles short of the record held by the Illinois Terminal for the longest continuous interurban route.

The top four photos are all of equipment on the Utah-Idaho Central, showing old and new painting schemes. All are at Preston except train No. 1, car 513, about to leave Ogden. The remaining three lower pictures show equipment of the SL&U.

The Lady Said No

★ *Lady Baltimore* balked at pulling trains for which she was not designed; awaits dismantlers.

WHAT has happened to the *Lord* and *Lady Baltimore,* middle-thirties aristocrats of the Baltimore & Ohio's fleet of locomotives? Why are they no longer seen at the head of the *Abraham Lincoln* and the *Royal Blue*?

Lady Baltimore, alas, like many another female with a title, has proved that she can't stand hard work, and is now patiently awaiting sale or dismemberment. *Lord Baltimore* has been stricken from the list of the elite, but is still working for the railroad under an assumed name—No. 5340.

Actually, the *Lord* and *Lady* didn't do so badly in the jobs for which they were intended, but the railroad found other locomotives which could do the job better. The two were built—the *Lady,* a 4-4-4, in September, 1934; the *Lord,* a Hudson, in January, 1935—for experimental purposes, and were designed primarily to haul lightweight streamlined trains, the Alton Road's *Abraham Lincoln* and the parent road's *Royal Blue.* They gave fairly satisfactory service in the handling of these trains.

But with the delivery of the B&O's first 1800-horsepower Diesel locomotive, No. 50, it soon became apparent that Diesels would perform much better on the lightweight trains than did the steam locomotives, which were equipped with high driving wheels and thus transmitted a very strongly felt piston-thrust vibration to the coaches for quite some time after getting under way.

No. 50 was assigned to the *Royal Blue* run in the East, and both No. 1, the *Lady,* and No. 2, the *Lord,* were sent to the Alton Road.

The B&O was not completely sold on lightweight cars for service in the East, where the curvature of the track, due to hilly country, caused swaying of the train to some degree. Consequently, the *Royal Blue* was replaced with a streamlined train of heavier equipment, and the original train was sent to the Alton, where it now runs as the *Ann Rutledge* and is performing satisfactorily on the comparatively straight track through the flatter, more open country of Illinois. Locomotive No. 50, the original Diesel, was also sent to the Alton, and one of the P-7's was streamlined to haul the heavier streamlined *Royal Blue.* This locomotive was later replaced by a 3600-horsepower, two-unit Diesel locomotive.

The *Lady Baltimore* was taken East and assigned to the run between Cleveland and Holloway, O., where her low starting tractive effort put her into disrepute. She was withdrawn from service in May, 1941, with the recommendation that she be either sold or dismantled.

Lord Baltimore was also taken East, and as No. 5340 is now pulling the fast *Washingtonian,* making a daily round trip between Washington and Cumberland, Md. The *Washingtonian* is a daylight train running each way between Baltimore and Cleveland. It seldom carries more than five cars between Washington and Cumberland, although 5340 has handled nine cars over the division westbound, which is practically uphill through the Potomac Valley.

Both the *Lord* and the *Lady* were built in the B&O's Mount Clare Shops. The female of the species was designated as Class J-1. Her cylinders are 17½" x 28"; driver diameter, 84"; weight on drivers, 99,800 pounds; total weight without tender, 217,800 pounds; rated tractive force, 28,000 pounds, 35,000 pounds with booster. Her factor of adhesion is lower than average, 3.56. (Average is about 4.0.) Combined evaporating and superheating surface is very low, only 2195 square feet.

The *Lord,* designated as Class V-2, has 19" x 28" cylinders, 84" drivers, 156,000 pounds on drivers, and weighs 294,000 pounds without tender. Rated tractive force is 34,000 pounds, 41,000 pounds with booster. Factor of adhesion is 4.59; combined evaporating and heating surface is 4219 square feet.

G. G. Grabill Jr., Box 238, Canal Winchester, O.

So that is what has become of the *Lord* and the *Lady*. Aristocrats they were, forced by the Revolution of the Thirties to relinquish their seats in the House of Lords to the revolutionists, the Diesels. And though they tried, as blue-bloods would, to adjust themselves to the inevitable loss of rank, they—the *Lady* especially—just didn't make the grade.

The *Lady* before retirement.

Above is *Lady Baltimore*, still bearing her title, at the head end of Wheeling-Cleveland train No. 59 at Massillon, O. (No. 59 now runs only to Akron.) Below is the former No. 2, *Lord Baltimore*, bearing the hoi-polloi number 5340 and divested of the name on the cab. As No. 5340 the ex-*Lord* is doing a good job on the fast daylight *Washingtonian*, pulling five to nine cars between Washington and Cumberland. *Lady Baltimore* is now in retirement at Holloway, O.

Baltimore & Ohio.

By Rail Across Lake Michigan

★ Car ferries run every day, Winter or Summer, cutting mileage and avoiding the congested Chicago area.

By Harold M. Mayer.

No bridge can ever span Lake Michigan; its great width is destined to be forever an obstacle to the continuity of land transportation. With the great concentration of rail traffic in Chicago, and the delays encountered by freight shipments as a result of the numerous yardings and switching movements in the Chicago area, the territory west and north of Lake Michigan was always at a disadvantage, both in time and freight rates, in shipping to and from the East. "Why not," someone asked back in 1885, "float our shipments across the lake?" As a result of this suggestion, there has developed, in the intervening years, one of the most remarkable types of railroad facilities to be found anywhere: the great car ferries which cross and recross the huge lake day after day all through the year.

As the skyscrapers of Milwaukee, the wooded shore of upper Wisconsin, or the gleaming white sand dunes of the Michigan shore fade from view and slowly sink beneath the receding horizon, let us relax in a comfortable deck chair and review the history, operations and significance of these remarkable ferries.

The old Flint & Pere Marquette Railroad had operated steamers across the lake between Milwaukee and Muskegon as early as 1882. These, however, were not car ferries, and the transfer of freight between railroad cars and boat at each side of the lake was very time-consuming and expensive. It was almost as bad, in fact, as moving the shipments over the much longer all-rail route around the end of the lake through Chicago, with all of the delays which were met in passing through the congested yards of that city.

The idea of placing the freight cars on a boat without loading and unloading the cars at the water's edge originated with the Ann Arbor. This railroad placed in service in 1892 the first of the numerous Lake Michigan car ferries, a wooden steamer with railroad tracks on its main deck. A few years later, the Flint & Pere Marquette, now the Pere Marquette Railway, put into service the first steel car-ferry, and in the years since its launching in 1896, the size and efficiency of the ferries have been steadily increasing, until now they are among the largest and finest vessels of the type to be found anywhere in the world. A fleet of about 35 of these ships shuttles back and forth across the lake between Michigan and Wisconsin ports.

To those who are familiar with the car floats which transfer freight cars across the Hudson, the Delaware, or Puget Sound, the term "car ferry" brings to mind large steel scows, low in the water, with tracks on their

Courtesy Pere Marq

Courtesy Pere Marquette.

Maiden trip.

Freight cars are loaded into car ferries through the stern. Here are 30 cars of evaporated milk being loaded into the recently built Pere Marquette *City of Midland* for its maiden trip.

deck, slowly towed by laboring tugs. Nothing could be in sharper contrast than the lake car ferries. Sturdy ships are required in order to provide dependable and safe transportation across Lake Michigan. The lake is a huge body of water, over 300 miles in length, and between 60 and 100 miles in width. When in the middle of the lake, one is as much out of sight of land as in the middle of the Pacific Ocean. And navigation is sometimes scarcely less dangerous, particularly when the autumn storms churn the lake into an angry, heaving mass of whitecaps and short, choppy waves. No long, gentle swells impart an easy rolling motion to the car ferries; the waves are close together, and powerful enough to heave the vessels in several directions at once. Mariners will not soon forget the large Grand Trunk car ferry *Milwaukee*, which, during a stormy October day in 1929, left port with a cargo of loaded freight cars and a crew of 54, and, in spite of radio and all modern aids to navigation, was never seen nor heard from again.

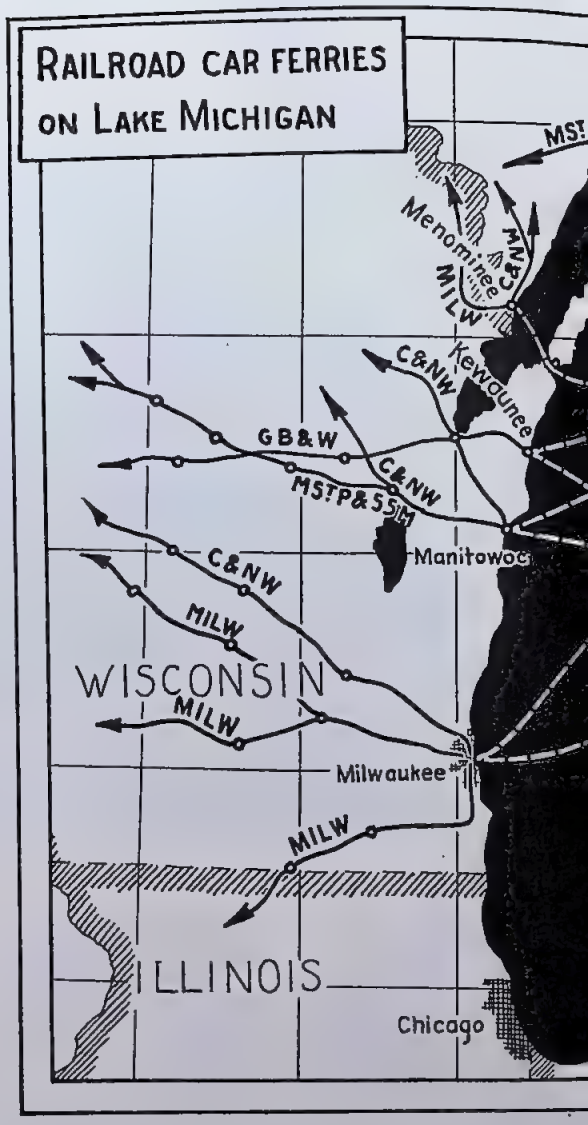
What manner of services do these vessels perform, and what sorts of ships are they, which swallow whole freight trains, carry them on voyages of 60 to 100 miles across the lake in a few hours, and then disgorge them on the opposite shore, with the regularity and scheduled accuracy which shippers have learned to expect of any railroad operation?

The car ferries are a part of the vast American railroad network, and, as such, are expected to get the goods through, safely and on time. This they do, in spite of all the alternating moods of the lake, Spring and Fall, Winter and Summer, night and day. In midwinter, long after the last of the huge ore freighters which ply the lakes has found safe haven for the season in the Calumet or the Cuyahuga, the Maumee or the Milwaukee River, the car ferries still shuttle across Lake Michigan, braving wind, storm, ice and snow.

Three railroads operate Lake Michigan car-ferry services: the Pere Marquette, the Ann Arbor, and the Grand Trunk. The Pere Marquette, which has an extensive network of rail lines in the southern peninsula of Michigan, operates three routes from Ludington, on the east shore of the lake: to Milwaukee, to Manitowoc, and to Kewaunee. Several round trips are operated daily to each of the west shore cities, where connections are made with the railroads serving the territory to the north and west.

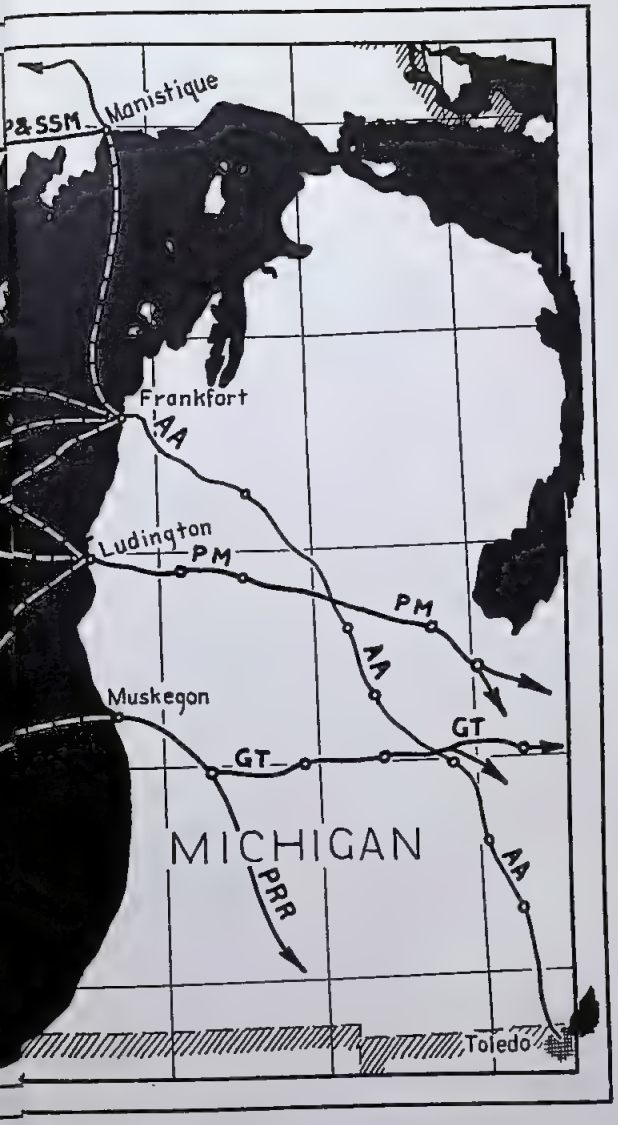
The Ann Arbor, which also operates a number of ferry routes, was the earliest of the roads to inaugurate the service. It is a Wabash subsidiary operating across the state of Michigan from Toledo, O., where it connects with the Eastern lines, to Frankfort, on the east shore of Lake Michigan. From Frankfort, four ferry routes diverge. One serves Manistique, on Michigan's northern peninsula; one reaches Menominee, Mich., through the scenic Sturgeon Bay ship canal and across Green Bay; one serves Kewaunee, Wis., where connection is made with the interesting Kewaunee, Green Bay & Western Railway across Wisconsin; and one of the Ann Arbor ferry routes connects Frankfort with Manitowoc, Wis., which is also served by the Pere Marquette ships. Finally, the Grand Trunk Railway, American subsidiary of the Canadian National system, reaches the east shore of Lake Michigan at Muskegon, and operates ferries across the lake from there to Milwaukee. The Pennsylvania has trackage rights on the Grand Trunk ferries. The traffic, operating problems, and types of vessels on all of these routes are very similar.

The typical Lake Michigan railroad car ferry is a large, deep-draft, steel steamship, not unlike an ocean liner in general appearance, carrying loaded freight cars, automobiles, and passengers. Accommodations for



No longer a barrier.

Lake Michigan was both an advantage and a disadvantage to Wisconsin. It was a part of a water highway over which the early sailing vessels brought Eastern manufactures and took back lumber and other Western products. But the lake also prevented direct rail connection with Eastern roads. The additional haul beyond Chicago put Wisconsin cities at a rate and time disadvantage as far as rail freight shipments were concerned. Now Pere Marquette, Grand Trunk and Pennsy come into Milwaukee on a rate parity with Chicago, and other lines link Manitowoc, Kewaunee, Menominee, and Manistique with the Eastern roads. Photo at right shows two Ann Arbor ferries double-heading to break ice in Sturgeon Bay, which, with a canal, cuts across the Door County peninsula. thumb of Wisconsin.



the latter range from plain but comfortable cabins on the older of the Grand Trunk boats to luxurious staterooms, dining rooms, and lounges on the newest of the Pere Marquette steamers. All of the ships are constructed with steel sides sufficiently high to withstand the most violent of the lake waves. All modern navigational and safety devices are provided, including radio-telephone, direction-finding equipment, depth-finding devices, and, on some ships, automatic mechanical pilots, although the use of the latter is restricted by the short duration of the voyages and the large number of ships which cross the ferry routes. Propelled by steam or turbo-electric engines, the ships cross the lake in four to seven hours. On most of the routes, two or more daily round trips are scheduled, and several of the runs are served by two or three steamers at all times.

The lower, or main, deck of each of the ferries carries the railroad tracks. Loading of the cars is done through the stern of the ship, which is backed up to a counterbalanced dock apron, across which the cars are pushed onto the vessel by a switch engine. A spacer car, usually a flat car, is used between the last of the freight cars and the locomotive in order to eliminate the necessity of the engine entering the ship. The weight of cars loaded on each track aboard the vessel must, of course, approximately balance, in order to maintain the stability and safety of the ship. The cars are locked in place on the deck tracks to eliminate the danger which would result if a car should ever break loose while the vessel is under way. Once the loading is completed, the ship's trim is as stable and safe as that of any other type of vessel.

Accommodations are provided on all of the car ferries for up to 30 freight cars with their loads. The newest of the ships will accommodate 32 loaded railroad cars. Automobiles, except on this one vessel, are loaded on the main deck through the stern, after the railroad cars are placed aboard. They are carried in the remaining space in the rear of the main deck. As the ship departs from the dock, a swiveled device comes down, closing the stern loading entrance, making this end of the ship watertight.

Sumner Harris, courtesy *Door County Advocate*, Sturgeon Bay, Wis.

Top, Pere Marquette; others, R. W. Campbell collection.

The new *City of Midland.*

New last year was the streamlined *City of Midland,* flagship of the Pere Marquette car-ferry fleet. At left she is seen from the air, 20 miles out of Manitowoc on her maiden trip. Other photos are of older, more typical, PM ferries.

Above the main deck, on most of the ferries, is a wide promenade deck, on which are the passenger accommodations, cabins, staterooms, dining room, and lounges. The cabins are typical ship's rooms, with upper and lower berths, though on some of the vessels more luxurious sleeping rooms are provided. The dining service is furnished on the same basis as the dining-car service on the operating railroads. On night runs several score passengers can be provided with berths, and on daytime crossings as many as 500 people can be carried, without crowding. In addition, up to 50 passenger and commercial automobiles are taken aboard during the peak-season voyages.

Although about 35 ships are in the Lake Michigan car-ferry service, the scheduled runs are so arranged that relatively few of them carry the great proportion of the passengers. The Pere Marquette boats lead in the number of passengers carried per season, and three of these ships, the *City of Flint, City of Saginaw,* and, largest and most luxurious of all, the streamlined *City of Midland,* are most popular, although they are not very different in size and accommodations from many of the others. Of the Ann Arbor ships, the *Wabash* is the largest and most popular among passengers.

The *City of Flint* and *City of Saginaw,* which are normally on the Milwaukee-Ludington run, were built in 1929 and 1930, and may be regarded as typical of the larger and newer ferries. They are powered by turbo-electric engines which give them a speed of 18 knots, have a gross tonnage of 3300, carry 30 freight cars. They are 369 feet in length, 57 feet wide, and operate on a draft of 18 feet.

The launching of the new Pere Marquette car ferry *City of Midland* at the plant of the Manitowoc Shipbuilding Corporation, Manitowoc, Wis., in 1941, made the transportation world sit up and take notice. The *City of Midland* is the largest and newest car ferry in the world. It compares favorably with many ocean steamers in size, speed, cargo capacity, and passenger luxury. With its great size, unusually powerful engines, its specially designed prow for ice-breaking, its palatial passenger accommodations, and its rakish streamlined superstructure, it ranks as one of the outstanding vessels on the lakes. The *City of Midland* is over 400 feet in length, carries 32 loaded freight cars and 50 automobiles, the latter at the stern on the upper deck rather than on the main deck as on the older ferries. As on the *City of Flint, City of Midland* and a number of the other car ferries, several hundred passengers can be carried. Operating between Ludington and Manitowoc, the city where it was built, the *City of Midland* performs two round-trip crossings every 24 hours.

The vessels of the Grand Trunk and the Ann Arbor are very similar to those of the Pere Marquette, but specialize more completely in freight carriage. Because of this, they operate on a somewhat more flexible

schedule, and, although they carry passengers and have comfortable cabins, are not quite so well known nor so well patronized. A trip across the lake on any of the ships, however, is a fascinating experience.

The ferries, in overcoming the barrier of Lake Michigan, have put the territory northwest of Chicago on a freight rate parity with that metropolis in competing for Eastern materials, products, and markets. They have opened up important supplementary east-west routes, saving as much as 36 hours over the round-the-lake rail movement for many types of traffic. Not only do the rail-ferry hauls benefit from the savings in time and the low rates which are made possible by the ferries, but all-rail traffic over the more circuitous routes also shares in the benefits, because the cities on the west shore of the lake are on a rate parity with Chicago. For example, a shipment from the Eastern seaboard to Milwaukee pays the same through rate as if it were shipped to Chicago, regardless of whether it moves by rail and ferry, or over the all-rail route through Chicago, or over one or more of the belt lines around that city. On all-rail movements, the additional 85 miles between Chicago and Milwaukee results in no additional cost to the shipper. The effects of this rate parity on cities such as Milwaukee are very great.

The traffic carried in the freight cars which are ferried across Lake Michigan is almost as varied as on any rail route. The tonnage moving eastbound is very nearly balanced with the westbound movement. In a typical year, 1935, the eastbound movement over all of the Lake Michigan car-ferry routes combined totaled 1,606,000 tons, while the westbound movement over the same routes was slightly less, 1,472,000 tons. With the tremendous increase in railroad traffic all over the country during the present war, and with the high degree of industrialization of the regions on both sides of the lake, the car-ferry traffic is now undoubtedly considerably heavier than in 1935, although, of course, for military reasons, the current tonnage statistics cannot be obtained.

Coal normally forms almost half of the total westbound tonnage. Milwaukee, the Twin Cities, and other cities to the northwest of the Great Lakes depend to a large extent upon the coal from the Appalachian fields, notably in Pennsylvania and West Virginia. A considerable part of the coal is moved from the producing mines by rail to Lake Erie ports for loading on the standard type of bulk lake steamer, particularly at Sandusky and Toledo, where the Pennsylvania and Chesapeake & Ohio, respectively, operate huge coal-loading docks. In spite of this, and fortunately in wartime, a large tonnage also moves by rail without breaking bulk, being ferried on the cars across Lake Michigan. Milwaukee is the largest coal-receiving port

Loading the ferries.

Sunday afternoons find many Milwaukeeans at docks watching loading, as of PM *City of Saginaw*, below. At right is Ann Arbor No. 3 at loading slip in Kewaunee.

R. W. Campbell collection.

Earl Ruhland, 2614-B N. 3rd St., Milwaukee.

on the lakes, and a not-inconsiderable proportion of the tonnage arrives at that city by ferry.

Other commodities which normally constitute the diversified westbound freight traffic aboard the ferries include manufactured iron and steel products (notably automobiles from the factories), salt from the Michigan mines, paper, lime cement, canned goods, fruit, and vegetables.

Eastbound, the principal tonnage is accounted for by grain and dairy products from the great agricultural regions west of Lake Michigan, lumber from the Northern lakes area, meats, and a wide variety of miscellaneous raw materials, agricultural products, and manufactured goods. The heaviest tonnage in both directions moves between Milwaukee and Ludington, although most of the other routes are not far behind.

The passenger traffic of the car ferries, although a by-product of the freight movement, is of considerable importance. It may be said that, while the freight is the meat of the ferry business, the passengers are the gravy. By means of the car ferries, travelers may avoid the long ride around the southern end of the lake, and in most instances cut the distance to be traveled at least in half. A large proportion of the passengers in past years have taken their automobiles aboard the steamers, thereby saving hundreds of miles of driving. Passengers without cars, including vacationers and weekend excursionists, are also carried in considerable numbers, particularly in Summer, when the lake crossing is very pleasant. The resort areas of northern Wisconsin and Michigan are so located that the ferries are in the direct line of travel between them and many of the important cities of the Middle West, including Chicago, Milwaukee, and Detroit. Midsummer crossings are festive occasions, with the ships thronged with vacationists and commercial travelers as well.

The ferry lines are not without competition, however, for the passenger traffic. The traveler always has the alternative of making the long trip around the lake either by rail or by highway, or flying to or from Milwaukee on a commercial airliner which crosses the lake in less than an hour, or of taking the *Milwaukee Clipper,* a newly built, luxurious passenger liner which does not carry railroad cars, between Milwaukee and Muskegon. A large number of people, however, prefer to travel, particularly in Summer, by car ferry, because of the comfortable accommodations, good meals, reliable schedule performance and restfulness of the lake voyage aboard the large steamers.

In late Autumn and in Winter, the lake crossing has enough of a tinge of adventure to make it interesting. Although Lake Michigan does not freeze over completely, thick sheets of ice frequently extend to beyond vision from each shore, making navigation in the harbors completely impossible for ordinary ships. Terrific storms, driving before them ice and sleet, powerful waves and strong winds, make some of the midwinter crossings resemble voyages in the Antarctic sea. Very often, the ships arrive at their destinations covered with inches of ice. The car ferries are the only steamships in all the vast expanse of the Great Lakes which operate on regular schedules all through the Winter. At times the ice offshore is so thick that even they, with their prows specially shaped and reinforced for breaking through the ice, must halt. At such times, the crew and passengers remain aboard for hours or even days until the weather abates and the ship can work itself free from the ice which surrounds it. Sometimes, when the ice is particularly heavy, vessels leave port in pairs so that one may clear the path and assist the other should the necessity arise. Such experiences, however, are rare, and in most years the accuracy with which the ferries maintain their schedules in Winter compares favorably with their performance in Summer. Often the ferries are called upon by the government in early Spring to assist in opening the channels at the Soo Canal for the fleet of ore ships which are so vital in maintaining uninterrupted production in the steel mills along the lower lakes.

But enough of Winter. With the coming of Spring the lake becomes calmer, and by Summer the tourists look to the ferry trips as important parts of their vacations. The gentle, cooling lake breezes, the unlimited horizon of sky and water and the restfulness of the voyage all combine to make for an interesting and attractive travel experience. The passenger, once aboard, is scarcely aware of the freight cars on the deck below, which make the cross-lake service possible. The ferries are, indeed, railroads afloat.

Railfans On Parade *

★ *The New Yorker's* reporter-at-large takes a look at an institution which has vanished for the duration.

By E. F. Kinkead.

THE train stood in the Washington Street yards of the Lehigh Valley Railroad, near the Jersey City terminus of the Liberty Street ferry. It was 9:15 o'clock of a bright Sunday several years ago. The engine's steam was up and two white flags at its head denoted that the train was a special.

From the gloom of the ferry slips, a queu of strange figures came toward the train at a run, tripping over tracks, and being hailed enthusiastically by some passengers who were already on the train. "There comes another one!" a passenger yelled. "Three more!" shouted another. "Five more." "Six more." Over the tracks came a man with long hair, dressed in a tight, French-looking blue serge suit, and yellow shoes, then a short, fat man, burdened with camera and paraphernalia, who looked about wildly as he raced along; there was a hard-faced, yellow-haired youth with sideburns, and a silk scarf under his suit-coat collar, who said loudly, as he and the other stragglers climbed aboard, "I came all the way from Hartford, Conn. I'd of died if I hadn't made this trip."

This special train was going on a junket to the shops of the Lehigh Valley Railroad at Sayre, Pa. Sayre is near Elmira, just over the New York State border, and we were to go there and back again, a distance of 271 miles each way. The train was routed to travel some of the time over parts of the Lehigh Valley's system never used for passenger service, was to beat by 45 minutes the fastest passenger service to Sayre, and thereby was to delight the group of enthusiasts on board. Other sightseeing tours have been sponsored by railroads these past few years, such as the ones on the Jersey Central and the Pennsylvania. This trip to the Lehigh Valley's shops was different. The special train was chartered by the New York Chapter of the Railway & Locomotive Historical Society, composed entirely of railroad lovers, and by *Railroad Magazine,* read entirely by railroad lovers. On an earlier trip, all the people had gone to Oneonta and Albany, over little-used tracks of the New York Central and Delaware & Hudson railroads. Started in Boston, the society has museum space in Harvard's Baker Library. On the train were men who collect timetables, tickets, old flags, and engineers' torches. There was even one man who told me he had a collection of railway semaphores set up in the back yard of his house at Madison, N. J., all of which work when he touches a button in his parlor. The men who almost missed the excursion were muddled by uncertainty as to whether the train left Jersey City at 9:15 or whether the Liberty Street ferry left New York at 9:15.

* By courtesy of *The New Yorker* magazine.

Timing train-speed.

In lieu of a speedometer, use the second hand of your watch to time a train between two consecutive mile posts. These may be concrete, metal or wood posts alongside the right of way, numbered to correspond with the mileage from one terminal or the other, or they may be painted bands on telegraph poles. The time for two or three miles, divided by two or three, gives a more accurate reading. Clip the following table and carry it with you:

Seconds Per Mi.	Miles Per Hr.	Seconds Per Mi.	Miles Per Hr.	Seconds Per Mi.	Miles Per Hr.
31	116.1	51	70.6	71	50.7
32	112.5	52	69.2	72	50.0
33	109.9	53	68.0	73	49.3
34	105.9	54	66.6	74	48.6
35	102.8	55	65.4	75	48.0
36	100.0	56	64.2	76	47.4
37	97.3	57	63.2	77	46.7
38	94.7	58	62.1	78	46.1
39	92.3	59	61.0	79	45.6
40	90.0	60	60.0	80	45.0
41	87.8	61	59.0	81	44.4
42	85.7	62	58.1	82	43.9
43	83.7	63	57.1	83	43.4
44	81.8	64	56.2	84	42.8
45	80.0	65	55.4	85	42.3
46	78.2	66	54.5	86	41.8
47	76.5	67	53.7	87	41.4
48	75.0	68	52.9	88	40.9
49	73.5	69	52.2	89	40.4
50	72.0	70	51.4	90	40.0

Typical railfan horde on a Kansas City excursion.

These men would never come anywhere near missing a train unless they were very badly muddled indeed.

With everybody aboard, the train pulled out, and with my companion, a printer I know who casually spends his Sundays traveling over little-known sections of railway track, I stayed for a while in the observation car. Groups of people sat about in there, nearly everyone with a camera. Some were trading snapshots taken on other journeys. Some were looking excitedly at lithographs of freight cars in an enormous album brought along by one of the excursionists. I noticed on a number of coat lapels celluloid buttons that bore a picture of an old locomotive of the Civil War era, with the letters "I. E. P. C.," and learned that this was the insignia of a member of the International Engine Picture Club. If you have such a button, it seems, railroad men everywhere will extend you special courtesies. All the chairs on the back platform were occupied. "They'll have to be boiled from their seats when we get back to New York," my companion observed. "They'll stay there the whole trip."

As we moved out of the yards, a panorama of freight operations in the Jersey Meadows lay before us. "As far as I know," said my companion with some emotion, "no passenger train has ever been over these tracks before." This was corroborated throughout the car. The train moved along slowly so that everybody could get a good view. There were tracks on all sides of us as far as you could see—the property of three railroads. To the left of us was a typical freight operation: breaking up a freight train over a "hump." "Look at that switch engine! Isn't she a whopper?" a man exclaimed. The engine was nosing a string of loose freight cars up a small, artificial hill. The cars rolled down the other side toward a fan-shaped mass of tracks. A man in a switch tower shunted the coal cars to one track, the livestock to another, the loads of lumber to a third. The cars slicked into position with fine precision and everybody praised the switchman's skill. We crossed over Newark Bay and joined the main line of the Lehigh Valley near the Meeker Avenue Station in Newark.

The Lehigh Valley is principally a coal-hauling road. Its main line, over which we were now to pass, is not particularly well known to passengers, my companion at this point informed me, for the Lehigh Valley Railroad operates but six passenger trains a day out of New York, and runs only as far west as Niagara Falls. My companion and I went forward and found ourselves seats. There was plenty of room, for members of the society and their friends like to move from one side of a car to the other and look out the windows, and they see to it that there are enough cars to permit this. We turned two seats to face each other, and sat down. It was an 11-car train, and there were about 325 passengers on it, some of whom came for the trip from as far away as Portland, Me. The New York Chapter at the moment numbers among its members a Catholic priest, a sanitorium attache, several Bell Laboratory workers, an employe of Bronx Zoo, and a commercial artist. Contingents were present today from three engineering schools, and there were some 25 women aboard, all very locomotive-minded.

Leaving Newark, we began speeding through the suburban towns and rolling farmlands of Jersey, past the Orange Moun-

Charles L. Edwards, 30 E. Adams St., Chic

tains, which have always seemed to me to belong rightfully to the Monarch of Mo. Watches came out and mile stones along the roadbed were counted, so that one could estimate that the train was going about 65 miles an hour. I was interested to discover this, as I had always thought that miles were computed by the click of the rails as the wheels passed over the track, or by the telegraph poles that flashed by the window outside. But my companion showed me the mile stones on one side of the track at each mile. When we passed a station, people looked at their watches again, and regular train timetables were checked to see how our speed was comparing with passenger service. A group of four youths in front of us were arguing the relative merits of steam and Diesel locomotives. "What is the efficiency of a steam locomotive?" one of them wanted to know scornfully. "What *is* it?" My companion leaped to his feet, beating his chest. "What *is* the efficiency of a steam locomotive?" he repeated. "What *is* it?" "Less than 35 per cent," said the young man, looking around at him and going on with his talk. "Do you realize," said my companion, moving a step or two forward, "that the detonations of an internal-combustion machine limit definitely its life?" Friends sprang between them, and the arguers were separated. They sat down, glaring at each other. "I'm a steam-locomotive man, myself," my companion explained to me, sternly.

We dived into the Musconetcong Tunnel, and shortly after we came out the conductor went through the train announcing, "Phillipsburg—last town in the state of New Jersey."

We picked up the Lehigh River at Phillipsburg and, still on the main line of the railroad, rode along its banks through the towns of Easton, Bethlehem, and Allentown. The main line of the Jersey Central was across the river, and a train was puffing up it, parallel to ours. The people I was traveling with, I discovered, always call a train by its timetable number. "No. 37," said one of them, as if recognizing an old friend. "There she goes," said another. "No. 37."

Everybody piled out at Mauch Chunk. There was a stop here, and the passengers swarmed around the engine. We were changing locomotives—taking on a heavy one to pull us over the mountains. In imminent danger of being decapitated, some of our enthusiasts wandered over the tracks among moving locomotives, talking excitedly. Cameras blossomed out. Tripods sprang up, and positions of advantage were sought from which to photograph the engines. Before the amazed glances of kitchen attendants in a frame hotel alongside the track, finders were adjusted and pictures were taken. Photography is a regular feature of the society's train trips, my companion assured me. A local youth tried to pose with his girl on one of the cow catchers and there was an embarrassed lull in activities. No pictures were taken till they got off. Our people didn't want pictures of youths and girls. Trainmen finally herded everybody back into the train and we started off again through the rocky, wooded Appalachians. We reached the top of the divide and the mountains lay around us, a swelling sea of brown oak leaves. "This is something you couldn't see from any highway," a man remarked, enraptured. "This is typically *railroad* scenery," said another. It was the part of the Appalachians that air-

plane pilots call the Graveyard—what would be a dim, dripping wasteland in a fog. Somebody wanted to know if it wasn't near here that there were a couple of crashes when the army took over flying the mails. At the mention of the word "airplane," there were snorts of derision. "I don't know," somebody else answered, "but they should never let the mails go up in those contraptions, anyway."

We took the "mountain cutoff" around Wilkes-Barre, getting off the main line of the Lehigh Valley. The tracks lay far above the town, which was visible below us. My companion and I went into one of the two diners attached to the train and sat across the table from a man who revealed himself as an oxyacetylene welder from Brooklyn, and his wife. He was a jolly fellow of 50 and had on a startling blue plaid shirt. "This is a branch line, isn't it?" he said as we sat down. My companion explained that it was a cutoff built around Wilkes-Barre for the handling of coal trains, and one over which no passenger train ordinarily runs. "Thought so," he said, with satisfaction. "Ain't been over these lines in 25 years, but I *thought* that it was that branch line." It turned out that he had been over practically *all* lines in the Eastern United States as an itinerant trainman in his younger days. The engineer took us around a curve fast. "Swing it, brother, swing it," the oxyacetylene welder said. During the course of the meal he explained that the last time he had been along here the medium-sized birch trees growing by the tracks had been mere seedlings. "Many's the time," he went on, "going through a tunnel I started out with a blonde and ended up with a brunette." His wife tittered, and he winked at us. He told us about the titanic argument between the Eastern railroad enthusiast and the Western railroad enthusiast as to which part of the country the trains went fastest in. It seems the Eastern man won, our confidant disclosed, because he told about the time he once said goodbye to his wife in Pennsylvania Station and as he stuck his head out of the window to kiss her goodbye he kissed a girl in Newark, N. J.

My expert companion smiled sourly. He told me later that this railroad joke was 20 years old. The oxyacetylene welder ended the meal with a joke about the Bergen Tunnel on the Erie line. Doctors often took their patients through it for operations, he said, because a man was thoroughly gassed by the time the train got through the tunnel. He rose, chuckled, wiped his mouth, and waved goodbye. My companion did not even nod to him.

We drifted back in the train to the observation car. On one of the platforms on the way back a fellow was taking moving pictures with his head stuck out of the door, the door wide open, and the train going around curves at 40 miles an hour. In the observation car, I glanced at the back platform. There, sitting just where we had left them, was the same set of fellows I had observed when the train was pulling out of the yards in Jersey City. Motionless, they sat as if mesmerized, their eyes following the receding line of tracks. One of them was bald and his bare dome was completely covered with soot.

We joined the main line again at Pittston Junction, and a little farther on switched engines at Coxton. Everybody got off again at Coxton. A good many men ran up the track, beyond the engine. "There are roundhouses up ahead," my companion explained. "The photographers want to get some more pictures."

At Coxton, we received a high-speed locomotive that was to take us on the last lap to Sayre. It was 88 miles to Sayre, along the banks of the winding Susquehanna. We made that 88 miles in 84 minutes. At times we reached a speed of over 75 miles an hour, one of the speed computers on the train figured, and I don't doubt he was correct. In the middle of the trip, with wind howling and snatching at the window sashes, an old railroad man, unable to contain himself any longer, got up in the aisle and yelled, "Boy, she's a-roarin'!" Our time to Sayre was what had been planned; it cut 45 minutes from the running time of the *Black Diamond*, fast-

And Waterloo is in Iowa.

Separated only by a distance of 4.6 miles on the river line of the Missouri Pacific, between Jefferson City and Kansas City, two of the greatest military strategists in history glare at each other. They are Napoleon and Wellington, stations on the MoPac.

Noel Hiram Deeks.

Saddle-tank switcher.

Scenes like this are meat for the avid railfan photographers on fan trips. This shot of saddle-tank 0-6-0 No. 3359 was taken on the trip to Sayre, where 3359 is used for roundhouse and shop switching. Built in 1891 by the Baldwin Locomotive Works and rebuilt by Lehigh Valley in 1918, the tenderless engine is, believe it or not, a coal-burner.

est Lehigh flyer, for the distance. I told my companion that was some last leg. "Every locomotive," he said severely, "is made to do some specific job. It would have been physically impossible for that Mountain engine to have attained this last speed." These amateurs of the iron horse are very intolerant of the enthusiasm of outsiders.

Everybody got off at Sayre, of course—some to take pictures, some to go on a tour of the shops. Drawn up on tracks beside the train was a long row of locomotives evenly spaced, showing the types of engines now in use on the Lehigh Valley. At the head of the line was a small yard engine. My companion called my attention to it. "Built in 1893," he said. "Written off the books as dead long ago, and still in active service. That's a *steam* locomotive for you. Do you think any *Diesel* engine would last that long?" He kicked into the cinders with an irritated foot.

My companion and I walked on to the roundhouse, across the tracks. It was a huge, roofed enclosure, dim and full of smoke. A 100-foot turntable in the center switched engines to any of the 46 sets of track within the building. My companion, in ecstacy at this point, with the thick roundhouse coal smoke eddying about his head, was murmuring, "Isn't this a rich smell? Isn't this satisfying?" at every foot or two we advanced.

We went from here into the Lehigh Valley's main shop—"one of the largest in the world under one roof," a man, who seemed to be a sort of unofficial guide, explained. It was a gigantic brick building, almost 800 feet long. All you need to know about it, and our trip through it, probably, is that when you take the outside cover off a locomotive, there is a fuzzy white padding underneath, made of asbestos, called lagging, and that the tubes of a locomotive (under this lagging and another iron cover) are taken out every four or five years, rattled to get the rust scale out, and put back in again. The explanation of this process fascinated everybody around me.

We had just got through the half-dozen or so other large buildings that comprise the Lehigh Valley's shops at Sayre when the whistles blew, at 4:30, for us to return to the train. We all started back, and as we walked, photographers joined us, coming out from repair pits under locomotives and down from the roofs of buildings, where they had been working feverishly.

Aboard the train on the return trip, everybody seemed happier and less inclined to argue. There was more camaraderie and more tolerance all around. People sat in groups, leaning back comfortably in their seats, and when one person chose to talk, the others seemed willing to listen. In the observation car nobody turned on the lights after the sun went down, and you could see the soft, silver-tinted hills moving by outside the windows. The moon was up. Only one man was talking as we drew into the New York terminal. ". . . and I figured it out to the *minute*," he was saying, "to the *minute*. After three full days on four different railroads, we pulled into El Paso exactly as I figured we would, and I was right—to the minute."

Diesel in the Rockies

Internal combustion and steam work together on the climb to the Moffat Tunnel. Another Maxwell scenic.

THE D&RGW put Denver on the transcontinental railroad map, and John Maxwell, who took these photos, is, like most other Denver citizens, pretty fond of the Rio Grande. He also uses his camera frequently on the Union Pacific. Right now he's a lieutenant in the army and busy elsewhere, but after Victory he'll be back taking more pictures like these.

Diesel pulls, steam pushe

Twenty-five miles west of Denve
a Great Wall of China. In the 50
Portal of the Moffat Tunnel [se
the major battles between westbo
line is owned by the Denver & Sa
has trackage rights and operates
were taken at Coal Creek, one of
a panoramic view of the plains
locomotives take water, and here
at their own train doubling arou
heights. At top a D&RGW freig
front of a mile-long freight, and
bend beyond. Soon the Diesel cr
comes the 1500-series pusher brip

John Maxwell.

s up to the Moffat Tunnel.

the Rockies rise up from the plains like miles from the mile-high city to the East e January 1942 TRAINS] are concentrated nd freights and Old Man Mountain. This lt Lake Railroad, but over it the D&RGW through to Salt Lake City. These photos the points from which the traveler enjoys see page 4, December 1940 TRAINS]. Here , too, passengers can look ahead or back d the tenuous curves needed to scale the ht Diesel rounds the nearest bend at the the steam pusher can be seen on the next sses the nearby highway bridge, and then ging up the rear.

Brief on the Green Bay Route

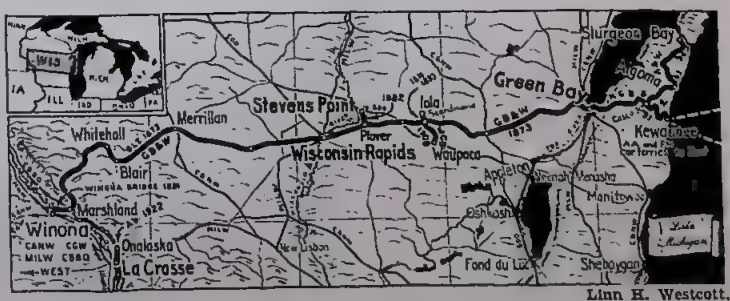
ACROSS the waistline of Wisconsin runs a short, relatively unknown Class 1 railroad which is well deserving of distinction. It is the Green Bay & Western, a line which makes money, has no fixed charges and no mortgages.

Like most roads of its size, the Green Bay Route was built to haul the farm produce and manufactures of the territory it serves. With declines in short-haul traffic, many such roads have fallen under the auctioneer's block or have been abandoned these past 12 years, but the men who run the GB&W anticipated traffic changes and in the early 1920's built the line up as a bridge road, a potent connecting link between larger systems.

Before 1920, 71 per cent of GB&W freight originated on the line; now less than 20 per cent originates on the line. Principal traffic now is through cross-state carloads between the car ferries of Pere Marquette and Ann Arbor at Kewaunee and the larger Western roads at Winona on the Mississippi River. It may be refrigerator produce or condensed milk rushing east, auto frames from Detroit bound for Twin Cities assembly plants, or coal from the Appalachian fields moving to northern Wisconsin and Minnesota. Manufactures and miscellaneous items account for more than 40 per cent of its total revenue freight tonnage. Next highest classification is products of mines, 29.2 per cent in 1939. Operating revenue in 1939 was $1,696,277. The only passenger service now is by mixed train west of Green Bay, although at one time GB&W even formed part of a Pullman route from Chicago to Sturgeon Bay.

The railroad proper is the 212 miles between Green Bay and Winona, where GB&W owns a one-third interest in the Winona bridge, thus connecting with both Burlington on the east bank and Milwaukee Road, Chicago Great Western, and Chicago & North Western on the west bank. All this main track was built at the same time, when GB&W entered business in 1873. The four branches were acquired later. Most important, and practically a part of the main stem, is the branch to Kewaunee, actually a separate company (Kewaunee, Green Bay & Western) owned two-thirds by Green Bay & Western and operated as a part of the same system. This was built in 1891, and was followed shortly later by the wholly GB&W-owned Ahnapee & Western to Sturgeon Bay, heart of the Door County cherry country.

Equipment includes 19 locomotives, 436 freight cars, 8 passenger cars, and 66 work cars. Three Alco-built Mikados delivered in the Fall of 1939 are the newest power.



Linn H. Westcott.

Photograph 1.

Your Guess

★ Railroad
your rail

Avid TRAINS reader that you are, a Pennsylvania locomotive is familiar to you at first glance, and the narrow-gauge D&RGW track is well labeled without a caption. From the maps you can spot the layouts of many a section of railroad trackage, and some scenes are simply so well known from calendars and travel publicity that 'tis an insult even to ask.

How about the photos on these six pages? Some are easy, some not so easy. How many can you identify to your complete satisfaction? We set no standard score, because of the varying completeness with which a picture can be located, but print the correct captions on page 46. Check and score yourself—but with conscience!

Photograph 2.

Is Good

picture quiz game to whet travel appetite.

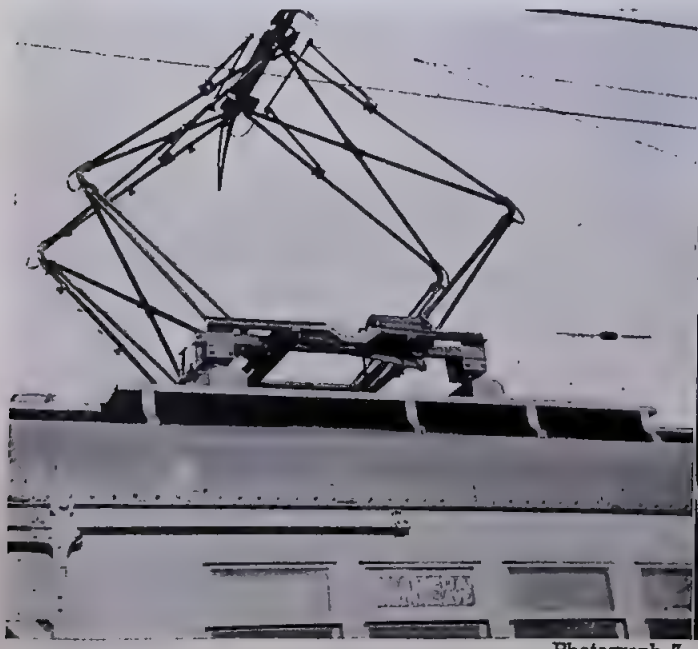
It's more fun if you do the test with someone else and compare results. Save it until your friends come around. You'll either impress them, or they'll depress you.

Photo credits are printed with the answers so they won't serve as clues.

Photograph 3.

Photograph 4.

Photograph 5.



Photograph 7.

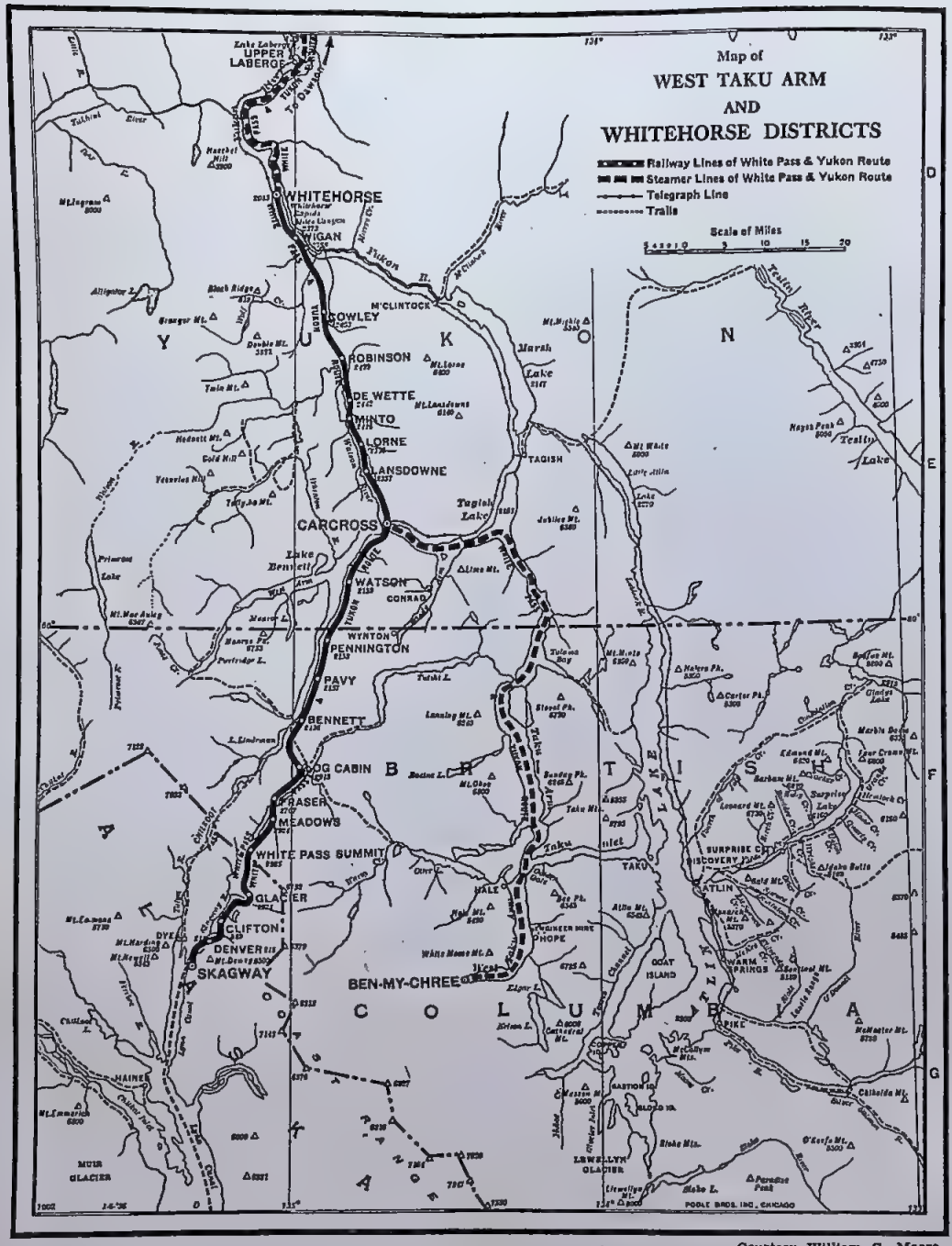
Photograph 8.

Photograph 6.

Photograph 9.

Photographs 11, 12, and 13.

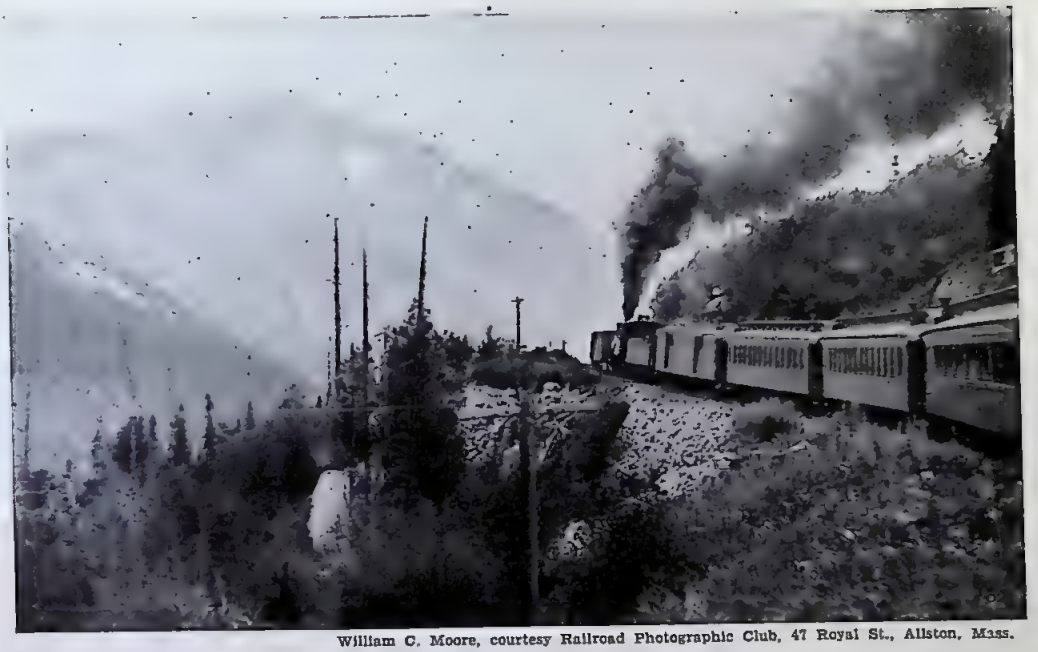
←Photograph 10.



Courtesy William C. Moore.

White Pass & Yukon was never completed.

Plans were to construct about 325 miles of line, from Skagway to Fort Selkirk, on the Yukon River, but only 112¼ miles was built. The three-foot-gauge railroad runs 20.4 miles through lower Alaska before crossing into Canada. The entire route is through wild, mountainous country such as that pictured on the opposite page, near the international boundary. When curves do not intervene, both locomotives can be seen from the rear car, struggling up the steep grades which elevate the tracks 2885 feet in 20 miles.



William C. Moore, courtesy Railroad Photographic Club, 47 Royal St., Allston, Mass.

White Pass & Yukon

★ Bill Moore's Trip, II: A trek on a three-foot-gauge grapevine steeped in mining lore.

By William C. Moore.

AN ALASKAN railroad trip begins, at present, with a steamship ride. After the war we may look forward to all-rail transportation on the now-building army railroad through the Canadian Rockies to Alaska, but our Alaskan sidetrip last year began at the Canadian Pacific docks in Vancouver. The CPR boats sailing to Alaska are maintained at the same high standards as all CPR services. In Summer, three *Princess* ships give frequent service on the 9- and 11-day round trips to Skagway, Alaska, with stops at Alert Bay, Prince Rupert, B. C., and Ketchikan, Wrangell and Juneau, Alaska.

In this whole trip through gorgeous scenery, narrow channels and protected bays, we saw only one railway—the CNR line which meets the coast at Prince Rupert. Built 35 years ago as the Grand Trunk Pacific, the traffic on this line remains light. Passenger service is increased to some extent by the "Triangle Tour," with Prince Rupert, Vancouver, and Jasper Park in the three corners, the two overland legs on CNR rail lines, and the Prince Rupert-Vancouver link by *Prince* boats, quite similar in size to the *Princess* ships of the CPR. Both passenger and freight trains into Prince Rupert are hauled by Consolidations, and we saw a few Moguls in storage. A fine diner-lounge and two air-conditioned sleeping cars were seen on the westbound train one day, but the remainder of the train consisted of a long string of baggage and express cars, some ancient and honorable coaches, and a colonist car. The steel open-observation on the rear was newer than anything we saw on the CPR. There was little activity in Prince Rupert, but the CNR maintains general offices there, as well as an attractive

By Dedman, from collection of Richard A. Horn, 5160 Agatite Ave., Chicago, Ill.

Down the main street.

At Skagway, White Pass & Yukon makes use of unpaved Broadway. Station and general offices occupy two small buildings in the background.

hillside park with several interesting totem poles and flower gardens.

In all Alaska only two rail lines are now operating—the government-owned Alaska Railroad from Seward to Fairbanks, and the White Pass & Yukon Route from Skagway north to Whitehorse in Yukon Territory. This latter line, of gold rush fame, is in Alaska for only 20.4 miles before entering Canadian territory. But in those 20 miles is some remarkable engineering, a terrific 3.9 per cent grade, and some of the grandest scenery on any railway in the world. While "White Pass & Yukon Route" is the common name, this 110-mile, three-foot-gauge line is made up of three separate corporations: Pacific & Arctic Railway & Navigation Company, British-Yukon Railway Company, and British Columbia-Yukon Railway Company—each for the three governmental divisions through which the line passes in quick succession: Alaska, British Columbia, and Yukon Territory.

The stampede to the Klondike gold fields began in 1897, using the Chilkoot Pass. A little later, nearby White Pass was discovered and used thereafter because the pass is lower and the grade easier. Men on foot and donkeys were the "beasts of burden." Construction of the White Pass & Yukon Railway began in April, 1898, and it reached Whitehorse June 8, 1900. The intervening section along Lake Bennett was completed a few months later. Total cost was 10 million dollars. Average grade from Skagway to White Pass is 2.6 per cent; maximum, 3.9 per cent; maximum curvature, 16 degrees.

Skagway, the northern terminus of the famous "Inland Passage," now has a popu-

William O. Moore, courtesy Railroad Photographic Club.

By Dedman, Richard A. Horn collection.

Locomotives of the White Pass & Yukon.

No.	Type	Cylinders, D. and S.	Driver Diam.	Pressure, Lbs.	Tractive Effort, Lbs.	Weight in working order, Lbs.	Builder	Date	Notes
	0-6-0	10″ x 12″	27″	100	-----	------	Baldwin	1878	Name: *Duchess.*
8	Climax	13″ x 14″	30″	150	-----	------	------	----	
51	2-6-0	14½″ x 18″	42″	160	12,975	95,500	Brooks	1881	Formerly No. 1.
52	2-6-0	14½″ x 18″	42″	160	12,975	95,000	Brooks	1881	Formerly No. 2.
53	2-8-0	15½″ x 20″	36″	140	16,095	98,600	Grant	1879	Formerly No. 3.
54	4-4-0	12″ x 16″	42″	140	6,838	73,000	------	----	
55	2-8-0	15″ x 18″	36″	150	15,188	100,000	Baldwin	1885	
56*	2-8-0	17″ x 20″	38″	180	21,000	159,000	Baldwin	1899	Formerly No. 6.
57*	2-8-0	19″ x 20″	38″	180	18,897	159,000	Baldwin	1899	Formerly No. 7.
59*	4-6-0	17″ x 20″	42″	180	18,900	161,000	Baldwin	1900	Scrapped, 1941.
60*†	4-6-0	17″ x 20″	42″	180	18,900	161,000	Baldwin	1900	
61*†	2-8-0	17″ x 20″	38″	180	22,100	167,000	Baldwin	1900	
62†	4-6-0	17″ x 22″	44″	180	18,500	160,000	Baldwin	1900	
63	2-6-0	14″ x 18″	42″	135	10,600	73,350	Brooks	----	
64	2-6-0	12″ x 18″	33″	135	9,752	72,000	Brooks	----	
65	2-6-0	14″ x 18″	42″	135	10,600	73,350	Brooks	----	
66*†	4-6-0	17″ x 20″	42″	180	18,900	161,000	Baldwin	1901	
67*	4-6-0	17″ x 20″	42″	180	18,900	161,000	Baldwin	1901	Scrapped, 1941.
68*	2-8-0	19″ x 22″	40″	180	29,000	213,000	Baldwin	1907	
69*†	2-8-0	21″ x 22″	42″	160	28,260	213,000	Baldwin	1908	
70*†	2-8-2	17″ x 22″	44″	215	25,200	230,500	Baldwin	1938	
71*†	2-8-2	17″ x 22″	44″	215	25,200	230,500	Baldwin	1939	
80†	2-8-2	19″ x 20″	44″	170	19,000	213,000	American	1920	Ex-Sumpter Valley, Baker, Ore., 1941.
81†	2-8-2	19″ x 20″	44″	170	19,000	213,000	American	1920	
1, 2	Gasoline motor cars	Paige (7 passengers). Ford (16 passengers).							

* Purchased new by WP&Y. †Now in service.

Data courtesy Richard A. Horn.

WP&Y has modern power.

Not all its locomotives are of the latest vintage, but the White Pass & Yukon has two built by Baldwin in 1938-9. Sleek No. 70, above, is one of these. With inside frame, she resembles a standard-gauge engine. No. 51, at far left, is not now in service. No. 80 (purchased from the abandoned Sumpter Valley, 1941) and No. 69 were used on Bill Moore's train. It is likely that more used power will be bought from the Nevada County Narrow Gauge Railroad if its abandonment, application for which has been made, is granted.

R. W. Campbell collection.

lation of 492 and is very much a ghost town. In gold-rush days, only 43 years ago, the population exceeded 15,000. The railway shops and the railway itself furnish the main employment. A gold mine is closed. Tourists either take the train trip inland or sleep on their cruise ships. The railway has a half-mile spur out onto the wooden docks to carry freight and special excursion trains directly from shipside. The main station and general offices occupy two small buildings at the lower end of Broadway, and the main line runs down the center of the street, little of which is paved.

On a fine August day, an hour after arrival of the *Princess Louise* at the only usable dock (the tide is over 22 feet here), a "West Taku Arm Special" of seven parlor cars left from shipside. This train was to terminate at Carcross in Yukon Territory, from which the same company operates a sternwheel paddle-boat in an overnight trip on Taku Arm—a long, narrow lake of exceeding beauty, with glaciers and mountain peaks all 'round about. Mikado No. 71, Baldwin-built, was the locomotive, with inside frame and exceedingly small wheels which transfer a maximum of power to the rails. Power aplenty is needed, for even with a light train, the steep grade, with no let-up for miles, and the curves (many reverse) are a test for any locomotive relying only on weight, power and normal adhesion, without cog or rack.

An hour later, the Whitehorse train was made up. It was really two trains in one, but that is common practice on the WP&Y, especially over the hardest part of the line, from Skagway to the summit of the pass. At the depot at the end of Broadway stood six cars—a baggage, two coaches and three parlor cars. All were of wooden construction with steel underframes. The parlor cars had wicker chairs facing on the narrow aisle, but these were readily reversed to face the windows. The scenery, while gorgeous, is very much one-sided, as the train hugs the side of the same ridge of mountains for 15 miles. There was time for me to walk the mile and a half to the north end of town, where the shops are located. Here the branch down to the ship dock joins the main line. The switches are all stub-end, and the rail, while light, is well laid on good crossties. At the shops were several freight cars being rebuilt, and several passenger coaches. The parlor cars are all in use during the Summer tourist season, and what repairing or rebuilding they need is done in the quiet Winter months.

No. 69, a Baldwin-built Consolidation, all coaled up, was just filling its tank. The crew was cordial and friendly, and willingly spotted No. 69 for a good picture. I then swung aboard for the ride backward down Broadway. The engineer stopped at the post office for some personal mail, but the international mail pouches were already on the train. Another stop was obligingly made while I bought some camera film at a small shop, and then it was time to hook on to the six passenger cars, well filled with passengers for Lake Bennett, Carcross, and Whitehorse. The train then proceeded north to the shops.

Up ahead on the main stem was a freight train—not a very large freight train, but big enough for what lay up the mountain. On the head end was No. 80, a trim Mikado, built by Alco. The crew told us that this was the newest engine on the line, and came

William C. Moore, courtesy Railroad Photographic Club.

Dead Horse Gulch.

The cantilever arch bridge over the old Yukon Trail at the bottom of Dead Horse Gulch is the most northerly such structure in the world. No. 80 is on trestle; No. 69 is about to follow.

from the Sumpter Valley, a narrow-gauge California road abandoned a few years ago. Behind it were two flat cars, then five box cars. No. 69 and its passenger cars coupled onto the rear, and on the "Go ahead" signal both engines started out in unison.

The single line keeps close to the Skagway River, a rushing torrent fed by glaciers. At a wayside shack, glorified by the name of Denver, the altitude is 218 feet. Then the climb begins. To the right we saw the edge of a glacier which extends 35 miles eastward and 90 miles to the south—quite an ice pack! Some fine waterfalls cascade down the steep rock sides, and at one point the solid granite ledge extends completely over the top of the train. At Milepost 14, nature helps the railway in its climb. Glacier Gorge extends several miles off to the east, allowing the railroad to follow the mountain side and still gain altitude by the extra three or four miles of this fortunate detour. For the next few miles, Tunnel Mountain furnishes a precarious perch for the line. Here are encountered what were the most formidable obstacles to construction. The roadbed is L-shaped, cut out of solid granite. Because of the smooth rock slopes, grade crews had to be suspended from far above by ropes while doing the first rock drilling in 1899. Here is the only tunnel on the entire line, 300 feet long, and standing a thousand feet above the bottom of the gulch.

Both locomotives were working with maximum effort. Smoke belched forth and there was ample opportunity on the sharp curves to see both engines using every ounce of steam the boilers could produce. The numerous snowsheds of extremely heavy construction not only protect against snows, but also the heavy rocks which come tumbling down in the Spring. Far below, in Dead Horse Gulch, we could see faint evidence of the "Trail of '98," used by men and donkeys before the railway was built. Just beyond Milepost 19 there is a sharp curve to the left and we crossed Dead Horse Gulch on a steel cantilever bridge, 215 feet high, the most northerly bridge of its kind and height in the world. A mile beyond, almost 20 miles from Skagway, we crossed the international boundary at over 2900 feet elevation. The actual point on the railway is in a gigantic snowshed, not only roofed with large timbers but also fitted with huge doors at either end because the strong Winter winds sweeping through the pass would soon fill it with snow if the ends were unprotected. Summit Station is located *inside* the snowshed, just at its northern end. Here a red-coated Royal Canadian Mounted Policeman boarded the train to make courteous inquiry of the passengers as to nationality and birthplace while the train proceeded to Bennett. At Summit, No. 69 cut out from the middle of the train, as No. 80 was capable of taking the 13 cars on the easier grades to Whitehorse.

Bennett, once a tent and shack city of 10,000, now has only a tumble-down church (in which Indians store sleds and cure animal hides), two shacks, and a combination station and dining room. Here luncheon or dinner was served to everyone on the train—that is, everyone who had purchased a $1 ticket from the conductor. Everything was in readiness before the train arrived, the long tables all set and piled high with moose meat and steak, several other meats, baked beans, big salad bowls, lots of bread and butter, and fresh-baked apple and blueberry pies—all we wanted, and more in

William C. Moore, courtesy Railroad Photographic Club.

Through a tunnel.

Freight and passenger trains are coupled together over the steep grades. This picture and the one on the opposite page were taken by Bill Moore from the last car on the train.

the kitchen when the first platters were empty. On our northbound trip, 85 dinners were served; southbound the next day, 140 persons were well fed in half an hour. It was a well managed job, especially when one realizes that everything (except the moose meat and blueberries) came either from Skagway or from the United States. The scene was reminiscent of days 50 to 60 years ago in this country.

For 26 miles from Bennett, the train ran along the shore of Lake Bennett, one of the most beautiful lakes in the world. It is light green, clear and sparkling, and reflects the high mountains along its borders. On it, gold seekers built large rafts and poled or rowed them through a chain of three lakes which flow into the Yukon River. In the rapids of the upper Yukon many men died as their rafts upset in the swift current, and indeed it was these rapids which caused the railway to be pushed through to Whitehorse, below the dangerous water passage, from where a safe trip can be made down the Yukon to Dawson, 400 miles to the north.

To Carcross the roadbed is generally downgrade and through country near the timber line—barren, rocky and partly covered with scrub pine. Small and large lakes fill every rocky hollow, and are fed from the melting snow and glaciers above. At Carcross, over an arm of Lake Bennett, is a quaint wooden swing-bridge of primitive design. A few whites and a number of Indians live here all year 'round. In Summer, the wooden paddle steam *Tutshi* leaves from here for an overnight cruise to Ben-My-Chree on a connecting lake known as West Taku Arm, and in full moonlight this is a romantic, never-to-be-forgotten sidetrip. The country between Carcross and Whitehorse flattens out, with mountains only in the far distance, and with no roads and very few signs of human habitation.

R. W. Campbell collectio

Hardly has the train stopped at Skagway before the locomotive is uncoupled and taken to the roundhouse. The trains is left standing in the street for the pas-

In late afternoon, the train pulled in to Whitehorse and drew to a stop between the Yukon River dock and the railway terminus. Up the dirt street is the frame Whitehorse Inn, operated by the WP&Y, as are several single- and twin-motor planes at the huge airport on a plateau above the town. This is a main stopover on the Seattle-Fairbanks jump for U. S. Army planes, and the size of the airport, with its modern facilities, is a great surprise in the wilderness. Gold rush prices still prevailed: $7 for a double room with beds rarely seen in secondary tourist

At Carcross, Yukon, a six-car train stops entirely on a curve. Three rear cars are parlor-observation; three front cars are coaches. Below, snow-fighters stop for water at Fraser, 28 miles from Skagway.

William G. Moore, courtesy Railroad Photographic Club.

R. W. Campbell collectio

By Dedman, from Richard A. Horn collec

sengers to unload at their leisure. Above is a mixed train near Summit; notice consist of two freight cars and two coaches with baggage-express-caboose sandwiched in between. Summit, at an elevation of 2885 feet, does not quite equal the mark of Meadows, five miles farther north, where the altimeter reads 2924.

homes in the States; 75 cents "service charge" to cook some fine grayling caught by oneself in the Yukon River about dawn, and 50 cents for a so-called ice-cream sundae. There was no fresh milk, and fresh oranges were in the same class as diamonds. Gasoline was 70 cents an imperial gallon. The railroad tariff, too, has never changed since "the good old days." It is 10 cents a mile, so that the 110-mile trip from Skagway to Whitehorse is $22 round trip per person, with parlor-car seat a dollar extra. Freight rates for this same trip are more on some commodities than the haul across the United States and the thousand-mile steamer trip to Skagway. At that, the company does not make money, as the traffic density is so extremely thin.

Only a few tourists have the time to take the week's round trip to Dawson by river steamer, so Whitehorse, north of 60 degrees latitude, is as far north as most people travel. In retracing our steps to Skagway, there was a noticeable thrill and quickening heartbeat when the descent from Summit began. It was comforting to see two airbrake pumps on every locomotive. It was encouraging to hear the crew say the airbrake repair department is the best one at the shops. Still, it was disconcerting to see the line winding far below, knowing that the time and space interval to that point was surprisingly short. Two downgrade stops were made, ostensibly for the view, but also permitting brakes and wheels to cool. Even then, descending speed was held to 20 miles per hour. Our train was behind No. 80 on the trip south and had a consist of nine parlor cars, two coaches, and a combination baggage, mail and express car, with caboose cupola worked in, too. Several natives were picked up along the line, and there were four or five maintenance crews edging up rock sides, cleaning up fallen rocks, replacing ties, and making one realize that the line is well maintained in spite of its remote location, lack of competition, and light Winter traffic.

The steamer trip back to Vancouver was restful and interesting, but without great appeal to a railfan. Arrived in Vancouver, we changed quickly to another CPR vessel, the *Princess Marguerite*, and soon set out for Victoria, a four-hour trip. Summer travel was very heavy. Victoria, the most English of all Canadian cities, and 300-mile-long Vancouver Island, on which it is located, are served by the Esquimalt & Nanaimo Railway (a subsidiary of the CPR) and by a short line of the CNR (freight only). We were hoping the Esquimalt would have specially lettered equipment, but the switchers and light engines we saw all had the usual CPR markings.

Later the same evening the steamer sailed southeastward down the sound to Seattle, spread out along a broad waterfront and sparkling (then) with street lights and neon signs. Here we were to start south for the run down the coast on Southern Pacific, and here we saw interesting activity as the three highly competitive transcontinental trains of Great Northern, Northern Pacific, and Milwaukee Road started for Chicago from two adjacent stations within 45 minutes. The details of this, and our trip back East, are for next month.

Photographs by T. O'Meara, courtesy *Chesapeake & Ohio Lines Magazine.*

Tunneling through rock is slow work.

The progress of a railroad tunnel through hard rock is only about eight lineal feet per 10-hour shift. The average routine includes one boring of holes for explosive, one blasting, one loading of cars, and one hauling. In the language of tunnelers this is one cleanup per shift. Below is the Conway mucker ready to load the rock from the first blast. Notice drilled holes above opening.

★ Larger locomotives force replacement of tunnel 85 years old.

ENGINEMEN westbound over the Blue Ridge Mountains on the main line of the Chesapeake & Ohio between Afton and Waynesboro, Va., cannot help but appreciate the new tunnel recently completed under this first ridge of the mountains. The westward grade has been reduced from 1.25 per cent to .91 per cent, and the much larger bore accommodates the modern C&O heavy power more comfortably. The replaced tunnel had been in service for nearly 85 years.

From Afton station to just east of Waynesboro the new line lies just south of the old, and the tunnel ranges from 100 to 500 feet south of the old bore. The old tunnel is ramrod straight, while the new one diverges gradually to the south as it goes west. As is usual with reconstruction of this kind, the alinement has been improved.

Opening of the new tunnel recalled Claudius Crozet, builder of the first Blue Ridge Tunnel. Ex-officer of Napoleon, first professor of engineering at West Point, an organizer of Virginia Military Institute, and principal engineer of the State of Virginia, Crozet was an engineering genius and a man of vision.

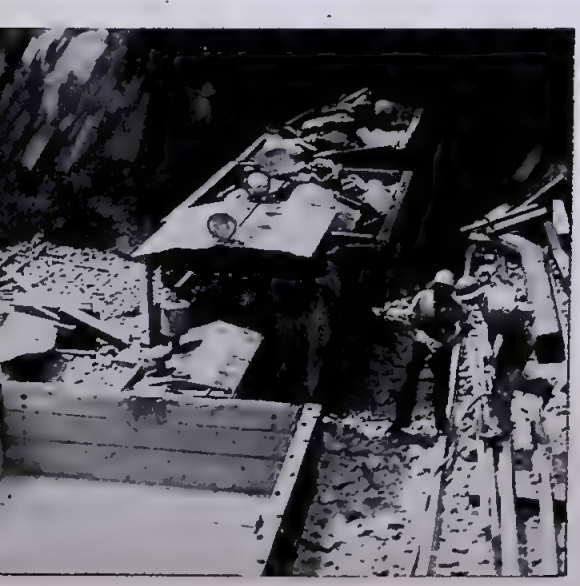
He was champion of steam railroads before any were operated in America. He advocated tunneling mountains before it had ever been attempted for a railroad. To him the State of Virginia entrusted the building of the 17-mile Blue Ridge Railroad and the tunneling of the divide. This was long before the Blue Ridge Railroad became the C&O.

The shaft which took Crozet's workmen eight years to blast and

New and old tunnels.

At right a road locomotive backs into the old tunnel with dump cars while work progresses on the lower new tunnel. Below is the drill carriage in front of the east portal, marked out in white paint.

muck, with black powder and mine mules, has carried mainline traffic through Rockfish Gap since 1858. The original Blue Ridge Railroad was built by the state, then leased to the Virginia Central, which consolidated with the Covington & Ohio to form the Chesapeake & Ohio. After certain specified payments out of revenues the original line was



transferred from the state-owned Blue Ridge Railroad to the private company.

The old tunnel is still in fine shape and it was only the advent of larger locomotives which finally forced the road to replace it with a tunnel of larger bore, and naturally on a better grade and alinement than the original traffic justified.

Tunnel construction scenes.

Indispensable mechanism in tunnel work is the Jumbo, or drill carriage, seen in the large photo on the opposite page, up against the rock wall at portal location. The carriage accommodates 13 drills, a driller and two nippers (helpers) to each drill. Seventy-five holes drilled into the rock face take 650 pounds of dynamite for each blast. After boring only two feet, drills are retempered and resharpened by a blacksmith. Drills are from two to 11 feet long, weigh from 10 to 50 pounds each. An average of 400 are used on each shift. After each blast the mucker (the loading device shown in the lower photo on page 42) moves under the drill carriage into the opening and loads the rock into dump cars. The mucker has an electrically driven spiked shovel-head and a rubber belt conveyer, and neatly accomplishes the task of hundreds of hand laborers. For every foot gained, 20 cubic yards or five small carloads of rock must be loaded and hauled away by the small Diesel locomotive as shown at lower left. Some of the material removed from the new tunnel was used in fill at the west end. The view at bottom, second from the left, shows this work as well as gives a general idea of the tunnel location. At bottom right are two drillers atop the Jumbo, inspecting their drills before the carriage is wheeled back to the rock face. In the tunnel heavy clothing is worn and metal helmets protect heads from falling pebbles and stone.

Answers to photo quiz.

THESE are the correct identifications for the pictures in the railroad picture quiz on pages 28 through 33:

1. View from cab of the Santa Fe Diesel freight locomotive pulling test train in New Mexico hills. Except for landscape and perhaps the locomotive striping and the dynamometer car, this is tough to place.

Courtesy Santa Fe.

2. Southern Pacific's now-canceled *Forty-Niner*, San Francisco-Chicago train, in the California Sierra Nevada foothills. Length of train and type of engine will distinguish this from other SP streamliners.

Courtesy Southern Pacific.

3. New Canaan Branch of the New Haven, one of the earliest electrified steam railroads in the country (1899). This line was originally D. C., changed to A. C. in 1907 at the time of the New York City-Stamford mainline electrification. The train is pulled by two of the original box-cab electric motors, a fast-disappearing type.

J. D. Bennett, 19 Highland Rd., Stamford, Conn.

4. Grand Trunk Western locomotive No. 3406 on the *Inter-City Limited*, standing beside Santa Fe No. 3406 on the *California Limited* in Dearborn Street Station, Chicago. The locomotive number board atop the boiler is characteristic of Santa Fe, the streamlining style characteristic of Grand Trunk Western. This station is the only one used jointly by these two roads.

C. G. Gibb, 6547 Union Ave., Chicago.

5. Interlocking Tower A at the west end of Pennsylvania Station yards, New York City, before they were as much built-over as now. Trolley wire of the present scene is missing, but the box-cab loco in right background, track arrangement, and twin tunnel mouths all place the scene.

Courtesy Union Switch & Signal Co.

6. The first steam-railroad electric locomotive in the United States pulling a train through the Baltimore Tunnel of the Baltimore & Ohio, June 27, 1895. The scene is recognizable by the queer type of overhead third rail and collector, abandoned in favor of standard third rail after seven years of use. This is also one of the few places where electric locomotives pull complete trains with steam-powered road locomotives attached. The initials B&O are barely recognizable.

TRAINS collection.

7. Pantograph atop a multiple-unit car of Interurban Electric, now-abandoned suburban subsidiary of Southern Pacific in the San Francisco Eastbay area. Destination sign gives away location, letters "INT" distinguish car from still-operating Key System.

Elmer Cumming, 3039 Bartlett St., Oakland, Calif.

8. Pennsylvania Railroad right of way on Philadelphia Division, west of Paoli. The Pennsylvania position-light signals are also used by Norfolk & Western, but the overhead trolley construction is definitely not N&W, nor are the four mainline tracks. The hills identify it fairly well as to territory.

Robert Dudley Smith, courtesy Pennsylvania RR.

9. The famous hanging bridge of the Denver & Rio Grande Western in Royal Gorge, west of Pueblo, Colo. Trains stop here so all passengers can alight and view the natural wonder of the gorge and the engineering wonder of the bridge, supposedly hung from the steel arches across the narrow rock canyon. The original bridge was so hung, but the present structure is supported on piers in the usual manner. The arches are kept as a tourist attraction.

Wesley Krambeck, 4406 Belleview, Kansas City, Mo.

10. Norfolk & Western facilities at Lynchburg, Va. On the island is Island Yard, engine terminal, and the N&W main line en route from one bank to the other. The railroad on the right bank is the James River Division of the Chesapeake & Ohio.

Aero Service Corp., courtesy Norfolk & Western.

11. We don't know either. If you can place this old-time shot accurately, write us and receive a Certificate of Unusual Powers of Perception.

TRAINS collection.

12. *MS-1*, the Illinois Central's fast overnight freight train from Chicago to Memphis, made up in several sections ready to leave Congress Street Yard in downtown Chicago. Although the trolley wires in the freight yard have recently been removed, the catenary and the Michigan Boulevard skyline quickly locate this much-used photo.

Kaufman & Fabry Co., courtesy Illinois Central.

13. The locomotive is, from its front-end appearance and particularly the pump shields, New York Central. The semaphore signals, the four tracks and the background look like the NYC between Buffalo and Albany. And by checking the signal numbers with NYC mileages the shot is placed near Rochester, N. Y., which is correct.

H. H. Kingston Jr., Rochester, N. Y.

UNITY
THAT GETS THINGS DONE
IN A BIG WAY

• You hear a lot about pooling these days—pooling materials—pooling machines—pooling man power.

This is an old story to the railroads.

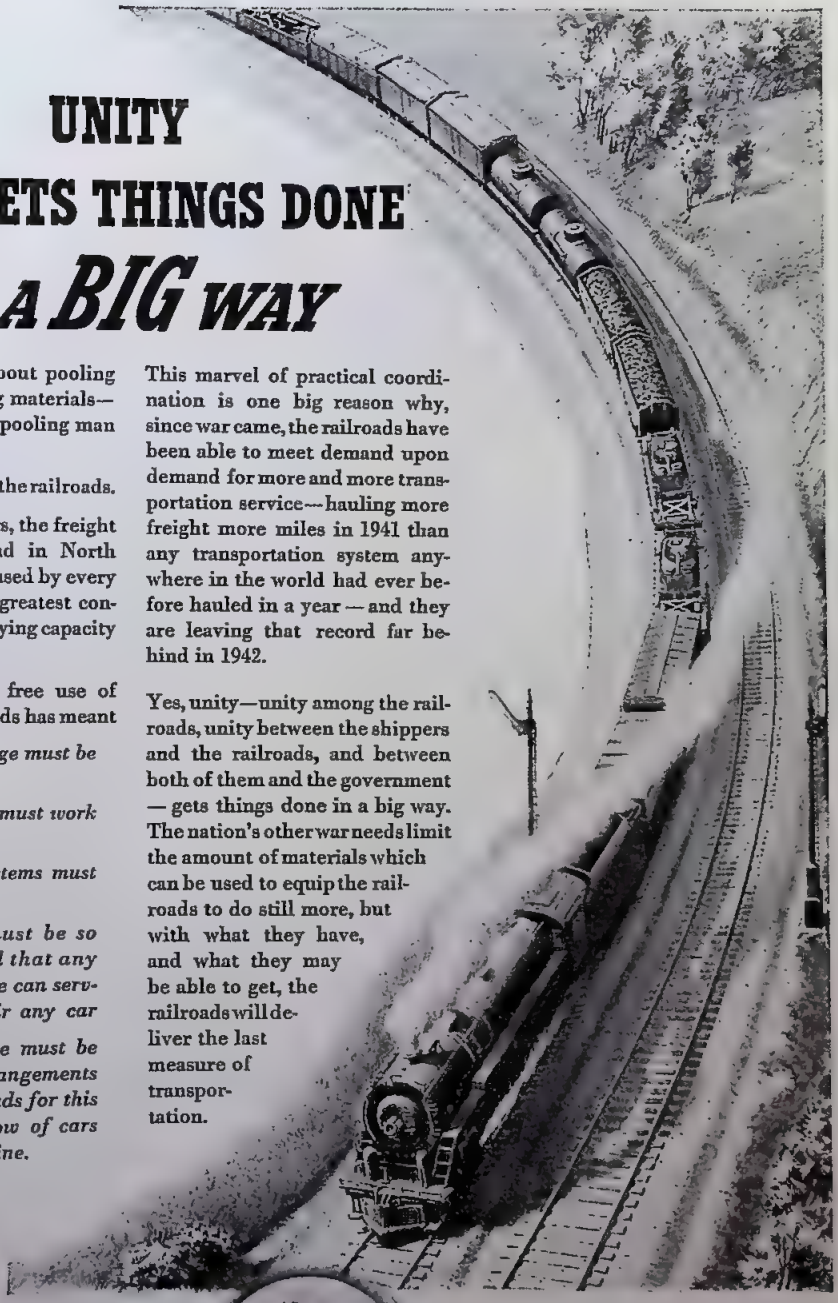
For nearly sixty years, the freight cars of any railroad in North America have been used by every other railroad—the greatest continental pool of carrying capacity ever conceived.

To accomplish this free use of any car by all railroads has meant

- . . . *that track gauge must be the same*
- . . . *that couplers must work together*
- . . . *that brake systems must be uniform*
- . . . *that parts must be so standardized that any shop anywhere can service and repair any car*
- . . . *and that there must be plans and arrangements among railroads for this continuous flow of cars from line to line.*

This marvel of practical coordination is one big reason why, since war came, the railroads have been able to meet demand upon demand for more and more transportation service—hauling more freight more miles in 1941 than any transportation system anywhere in the world had ever before hauled in a year—and they are leaving that record far behind in 1942.

Yes, unity—unity among the railroads, unity between the shippers and the railroads, and between both of them and the government—gets things done in a big way. The nation's other war needs limit the amount of materials which can be used to equip the railroads to do still more, but with what they have, and what they may be able to get, the railroads will deliver the last measure of transportation.



ASSOCIATION OF
AMERICAN RAILROADS
WASHINGTON, D.C.

Letters

★ Interesting sidelights on railroads as readers observe them.

Santa Fe Has Train Service.

THE popular conception that Santa Fe, N. Mex., is devoid of passenger-train service [Letters, July TRAINS] seems to be incorrect. According to its current timetable, the AT&SF still sends Santa Fe a mixed train from Lamy [two trips], daily except Sunday.

Carson City, Nev., is an even more trainless state capital than the New Mexico city, for it gets a mixed train only when the Virginia & Truckee decides not to send a bus instead. *George Hilton.*

5555 Everett Ave., Chicago, Ill.

[A rap on the wrist to TRAINS editors for not consulting the *Official Guide* before publication of the letter in question. The mixed train service to Carson City is listed for alternate days, with motor train service to fill in the daily schedule.—*Ed.*]

Bill Moore's Trip.

BILL MOORE states, in his article on page 36 of the August TRAINS, "After a stop at the new station at Hamilton the train heads eastward to Toronto on the main Montreal-Detroit line of the CPR." The main line of CPR over which Montreal-Detroit-Chicago trains pass is 15 miles north of Hamilton and is reached by a branch line at Guelph Junction. Trains bound from Hamilton to Toronto, except in case of emergency, use the Canadian National track from Hamilton Junction to Toronto, the main line over which CNR Montreal-Chicago trains run.

Mr. Moore also states that TH&B engine No. 17 pulled the train out of Buffalo. There is no engine of this number. TH&B trains are pulled by Pacifics 11, 15 and 16, or by CP Pacifics 2659, 2662, 2332, 2337, or by any NYC engine, but usually 4390, 4392, or 4395, equipped with automatic train control.

TH&B No. 11, 4-6-2, was, I understand, one of a batch built for Canadian Northern [now part of Canadian National], but on being rejected by the purchaser for some reason it was sold to the TH&B and has given many years of service. Her sister types are therefore CNR engines.

TH&B 15 and 16 were delivered December 6, 1923, and were just being pushed into the roundhouse tracks as I arrived at the interlocking tower to start the job I still have.

When I was about the age of three to five years I kept a train register and noted hundreds of engine numbers of Grand Trunk, Wabash, and Michigan Central, as I lived within a few feet of all three. Now I cannot find these books, but I wish I had kept them. *L. C. Riley.*

56 Fairleigh Ave., S., Hamilton, Ont.

CS&CCD Motive Power.

I ENJOYED your article [July TRAINS] on the old Colorado Springs & Cripple Creek District Railway very much, but there were some inaccuracies as regards motive power. On page 24 it is stated that the Prairie type illustrated is No. 3. The CS&CCD never had a No. 3. Its 2-6-2 switchers were as follows: Nos. 101 and 102, Schenectady 1900; No. 103, Schenectady 1901; No. 104, Schenectady 1902. Furthermore, these engines had 19″ x 24″ cylinders instead of 22″ x 24″ cylinders. This information comes directly from the 1906 annual report of the Colorado & Southern—certainly an authoritative source.

I was up at the old Portland Mill yard in 1938, and photographed the engine illustrated.

George Krambles, 2244 Cleveland Ave., Chicago.

To the best of my knowledge, the old 2-8-2 was No. 102. It was one of the only two engines on which the numbers still showed.

The 2-8-0 types of the CS&CCD, all built by Schenectady, were: Nos. 1 to 6 [including a No. 3?—*Ed.*], built 1900; No. 7, 1901; No. 8, 1902. They had 195 pounds pressure and not 180 pounds, as stated. Nos. 1 to 6 were broken-in on the old Colorado Midland, as that road had a shortage of motive power at the time.

E. L. DeGolyer, Jr.

8525 Garland Rd., Dallas, Tex.

Danse Macabre in Reverse.

Two interesting scenes of graveyards coming to life can be seen at Eighth Avenue and 155th Street and at White Plains Road and 239th Street in New York. Ever since the Sixth and Ninth Avenue elevated lines were abandoned (and, only recently, the Second Avenue line), hundreds of old motor and trailer cars have filled those yards. Now they are being hauled out for service in and about munitions plans far from New York. Many are more than 40 years old.

Thirty-three cars are reported on their way to Pine Bluffs, Ark.; 90 to Los Angeles; 33 to near-Chicago. I understand that the Key System in San Francisco will use 90 cars and that Pacific Electric has been inspecting others.

Undoubtedly many subscribers to TRAINS will see some of these old-timers in distant places and will be interested to know about them.

Stewart O. Stearns.

21 Chauncey St., Cambridge, Mass.

Emmitsburg Railroad—a Memory.

RECENTLY I passed through Emmitsburg, Md., and found that the old Emmitsburg Railroad has folded completely. The tracks were gone a year ago and now even the station and sheds are in the past.

I have seen this town and its little connection with the outside world quite often. It is a very beautiful spot, much like a scene on a Christmas card. When I was there in 1938, old age had already planned to settle with death as far as the line itself was concerned. The auto and the truck killed it.

At one time, this road had three engines, two coaches and a combine to run over its 7.3 miles of track between Emmitsburg and Rocky Ridge, Md. It served the Mount St. Mary's College and transfer freight from the Western Maryland to Emmitsburg. In 1938, only No. 8, a 2-6-2 (built in 1925, she was comparatively new), and one coach were left. The sheds were in a terrible state of disrepair. And now it is all gone!

J. Lawrence Dixon.

5132 Locust St., Philadelphia, Pa.

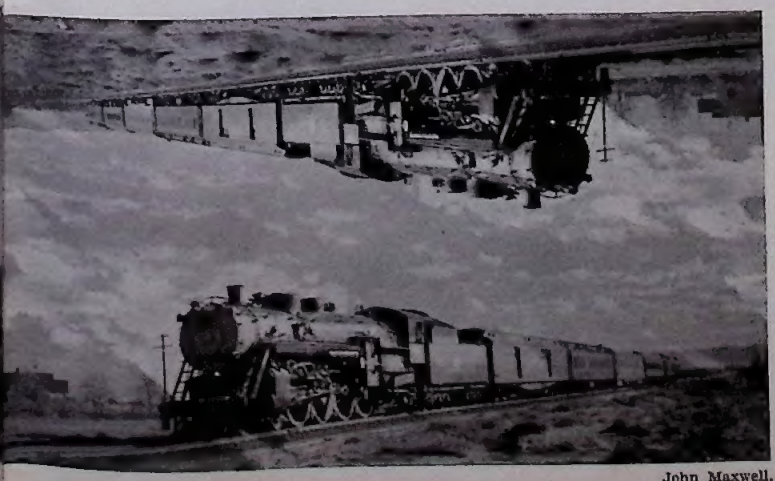
Mixed Halftones.

THE prize-winning view of Susquehanna engine No. 953 on page 4 of the August TRAINS should have been credited to my good friend, Robert Collins; the view of Erie No. 953 on page 5 is one of mine.

Donald W. Furler.

94 W. Main St., Glen Rock, N. J.

[Sorry, Mr. Furler and Mr. Collins. And thanks to Mr. Furler and the many readers who noticed the discrepancy and let us know about it.—*Ed.*]



John Maxwell.

Freak photos.

The smoking interurban at the left was snapped by George Krambles, Chicago, as an ordinary Illinois Terminal train passed a stationary stack. The overhead crossing of the *Missouri Flyer* over the *Missouri Flyer* of the Burlington Route is not a mirage, but an accidental double printing of a photo by John Maxwell of Denver. Professional photographers have marveled at the perfection of this print.

The Month

★ Some passenger trains crowded; others need more business.

★ Lounge and club car seats in all Pullman cars and on many individual railroads are now reserved and sold the same as parlor car seats. Thus the wartime capacity of limited trains is increased by reducing the amount of free space formerly allowed first-class passengers. Unusual things are happening to take care of increased passenger business. During the July 4 rush, Atlantic Coast Line diners worked between Washington and the state of Maine. Suburban equipment, including multiple-unit electric cars pulled by steam locomotives, traveled long country routes to resorts, and the Pennsy used multiple-unit trains in New York-Philadelphia through service. To augment equipment some roads have placed lights and seats in the baggage ends of combination cars, and parlor cars have been changed into coaches. The Pennsy has even, as an experiment, cut five portholes on each side of a steel box car, and installed seats, steam heat, washroom, and air-signal lines for passenger-train service.

But for all of this, no shortage of railroad passenger transportation has yet developed. Sometimes people can't get just the accommodations they want on just the trains they prefer, but the railroads are taking the passengers as they come and delivering them where they want to go. Some roads, plenty of routes and hundreds of trains, can stand much, much more business, and are as anxious to attract passengers as they were a year or two ago. With all the talk of travel rationing and the prohibition of travel advertising, it is difficult for these less-used railroad passenger facilities to assume their share of the wartime load, and one of the problems of the ODT will no doubt be to see that passengers freely use the trains and roads on which plenty of space is to be had, while at the same time travel is restricted, if need be, on the few trains and services which are or may become overcrowded.

Wartime freight traffic continues to roll on schedule despite increased carloadings (more than 100 per cent above normal on some of the Western roads).

★ The Minneapolis & St. Louis has been sold at last. After 42 unsuccessful auctions, a bidder appeared on the forty-third try and the road was sold for the minimum price of $2,010,000. Special Master in Chancery Howard S. Abbott had conducted the 42 previous auctions, until he knew the legal rigamarole by heart, but had the bad luck to be ill on the day the road was actually sold. Now the "Peoria Gateway Route" will be reorganized as two separate corporations, one to own the lines west of Minneapolis and the other the lines south of Minneapolis.

★ The Southern Pacific has abandoned the 120 miles of original Central Pacific line around the north end of Great Salt Lake, and the rails, now being removed, have been requisitioned by the navy. This mileage includes Promontory Point, where the gold spike joining East and West was driven May 10, 1869 [see May '42 TRAINS]. Lucin Cutoff across the lake short-circuited this track from the main line in 1904.

★ The Office of Defense Transportation has asked a survey of local train service and the elimination of all such trains which are paralleled by adequate bus service. The order specifically exempts commutation trains, and it is not meant to include local trains which are well patronized and doing an important transportation job. In fact, in cases where the local trains are doing the better job, the buses will be eliminated. According to Joseph Eastman, director of ODT, "Unnecessary duplicate service must clearly be avoided, and the choice as to the service to retain must depend on which can serve the public better."

★ Object of any economy in train service (as above) is not only to save cars, but even more to save locomotives. With greater efficiency in car loading and use the railroads are manufacturing many more ton-miles with actual decrease in carloadings. But locomotives are the fundamental machine used in manufacturing ton-miles, and every locomotive must be put to the best use. *Railway Age* points out that the need for more efficient use of locomotives is resulting in greater mileage per month for steam locomotives, and that the steam locomotive, as far as utilization is concerned, may even have been a victim of its own history and the fact that steam locomotives as a matter of habit never have been used to the limit of their capacity.

★ Union Pacific is installing centralized traffic control on the 175 miles of single track between Las Vegas, Nev., and Daggett, Calif. Beyond Daggett is the double-track line through Cajon Pass, used jointly with Santa Fe. The signaling throughout the area will be controlled and indicated over one pair of wires, and this same pair of wires will also be used for communication.

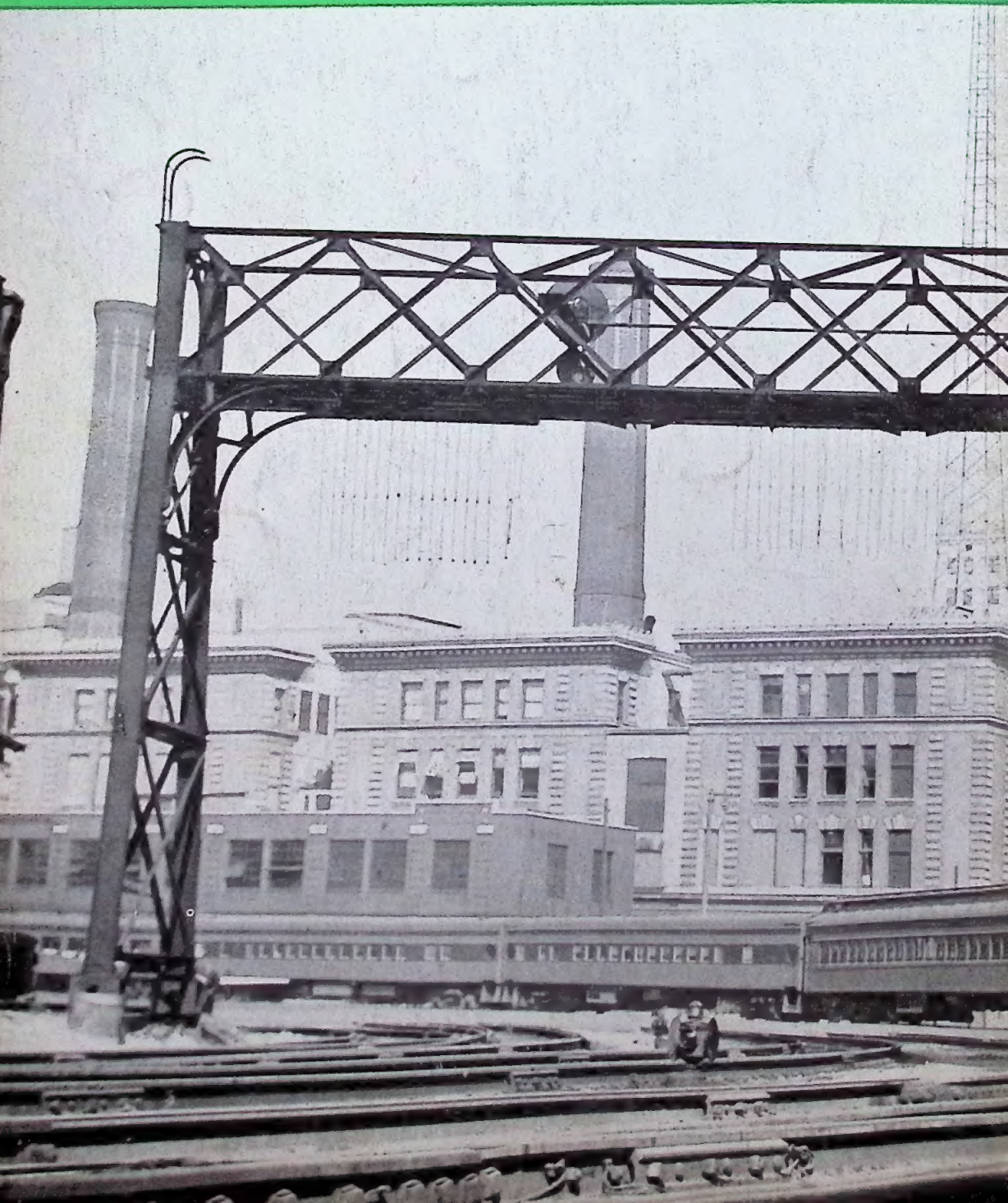
Next month:

William Moedinger Jr. tells about railroads of Pennsylvania in a comprehensive descriptive article copiously illustrated with photos and map. It's just one of the many interesting articles you'll find in the October issue. Don't miss it!

R. V. Nixon, Box 101, Livingston, Mont.

North Coast Limited near Butte.

Strung out along a mountainside strewn with rocks that make the 10 cars and Locomotive 2650 look like toys is the Northern Pacific's *North Coast Limited*, descending the 2.2 per cent westbound grade from the Continental Divide into Butte, Mont. The rock formation is volcanic.

Trains

With the downtown Milwaukee skyline behind it, Milwaukee Road No. 28, a Chicago non-stop express, leaves the station for its 75-minute, 85-mile run. The locomotive is an F-6 Baldwin-built 4-6-4.—*Henry J. McCord, 289 Blaine St., Batavia, Ill.*